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FARM CHEMICALS

AGRICULTURE
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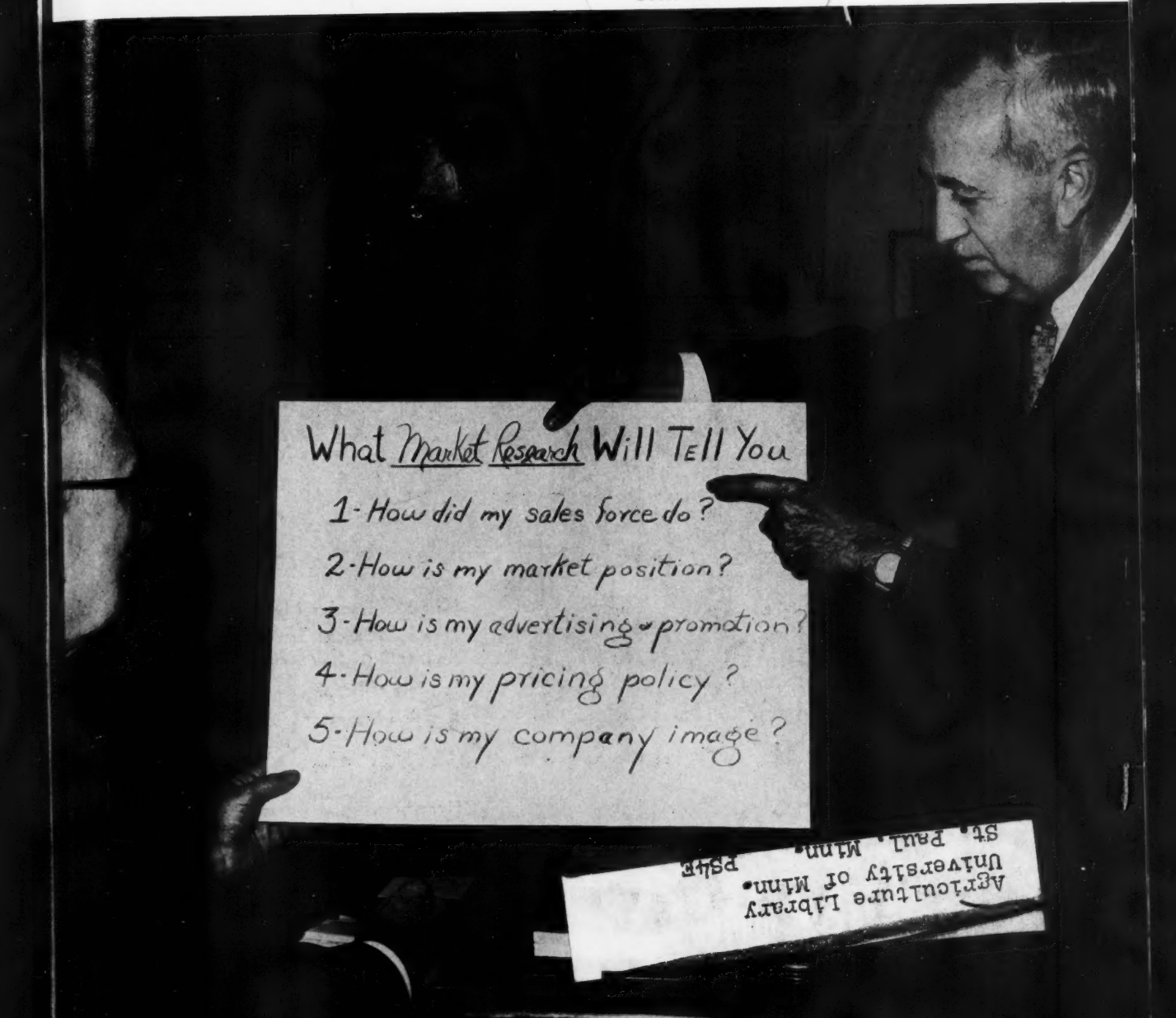
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MEMBER BUSINESS PUBLICATIONS AUDIT

The national business magazine for the fertilizer and pesticide industries, FARM CHEMICALS, serves primarily those persons responsible for management, marketing and production. It has a qualified circulation for selected executive and supervisory persons within specified segments of these industries, as well as in certain closely allied fields. Subscription rates to all others are: in the U.S., its possessions, Canada, Cuba and Panama: $6.00; in other countries: $7.50. Current issue 50 cents. Back issues $1.00. Established in 1894 as *The American Fertilizer.*

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FARM CHEMICALS

Vol. 123 No. 1 January 1960

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THE COVER PICTURE

The analyst points to five questions market research can answer to help management meet the challenge of the 60's. Hector (Don) Lazo describes in detail these and other criteria for measuring your total performance in marketing. He attempts to show you the possible trouble areas in your program—and how to solve them—in his story of "How to be a Constructive Critic of Your Present Marketing Program," page 18. His will be one of the papers offered in the Proceedings of FCMS. To reserve your copy see page 4. *FARM CHEMICALS photo by Vince Squazzo.*

THEY MOVE MOUNTAINS TO SHIP CARLOADS

Cyanamid literally moves mountains of high-grade phosphate ore to ship carloads of Trebo-Phos . . . the triple superphosphate with controlled porosity.

To ship you the highest quality triple superphosphate, Cyanamid's "walking-giants" scoop up twenty-four ton bucketfuls of high-grade phosphate ore at the rate of one ton every one and six-tenths seconds. To make one carload of TREBO-PHOS*, approximately 340 tons of ore are mined. This tonnage dwindles as the ore is washed, screened, graded and dried. Much of the remaining is used to make highly concentrated phosphoric acid which, when added to fine rock, makes triple superphosphate. Quality is checked at every stage . . . the result: a triple with controlled porosity.

Its characteristic: ammoniation rates as high as 5% without evolution of ammonia fumes, yet TREBO-PHOS particles will not take on excess amounts of moisture. The finished product is a dry, drillable, well-conditioned fertilizer. American Cyanamid Company, Agricultural Division, New York 20, N. Y. **TREBO-PHOS is American Cyanamid Company's trademark for its triple superphosphate.*

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LETTERS

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C

SOME SUGGESTIONS

Belle Glade, Fla.

Page 52 of your current article features an article on production of hydroponically grown grass by a concern named "Hydroponics, Inc." I would like to get additional information from them, but their address was not included. I would appreciate receiving this if you have it available.

I would like to suggest that you start a production and formulation series similar to the one on Suspension Fertilizers and begin with basic dry fertilizers and production, and go through pesticides, fungicides, et al; and go into greater details. Include the address of the equipment manufacturers, production hints, formulation short cuts, and pitfalls to be avoided; and have all of this as a series of perforated sheets that could be removed from the magazine and put into a permanent file folder.

I enjoy your magazine; but I wish that more would be included on Florida produce, which isn't small business, you know!

Sincerely yours,
HOWARD P. HOLMAN
HECTOR AGR. SUPPLIES

Mr. Holman, you and other interested readers may address Hydroponics, Inc. at 4604 Bluff Rd., Indianapolis, Ind. Your suggestions for future Production Methods articles are appreciated.

"HIDDEN PLUSSES"

Portland, Ore.

I have just completed reading the "Hidden Plusses in Your Product" article in October, volume 122 No. 10 of your magazine written by Mr. Ted Pollock.

This, I think, is very excellently written and it would be extremely useful if copies of it are available. If they are, I would like to have 15 copies and we would be happy to pay you for any reprints. Thank you.

Very truly yours,
KEITH SIME
Sales Manager
MILLER PRODUCTS COMPANY

Houston, Tex.

As noted in the November, 1959 issue of "Distribution Data Guide," we would appreciate receiving your article entitled "Hidden Plusses in Your Product." Enclosed please find a check. . .

Very truly yours,
LEROY WHITAKER
Market Development
JEFFERSON CHEMICAL CO., INC.

ANOTHER COPY NEEDED

Edgewater, N. J.

I find that copies of FARM CHEMICALS are going to several other departments in our Agricultural Technical Div., but that we do not receive it here at our Technical Service Laboratory where I am located. Since our fertilizer operations and phosphoric acid work will be done at this laboratory, we think it advisable to receive your informative publication. If we qualify, may we be included on your qualified circulation list?

Very truly yours,
F. M. BATSON
Technical Service
GENERAL CHEMICAL DIV.
ALLIED CHEMICAL CORP.

Your name is being added immediately to our qualified circulation list. Thank you for writing. We'd be happy to hear from other readers in executive and supervisory positions within the industry who are not receiving copies of FC regularly.

New York, N. Y,

Kindly send to the attention of the Market Research Library one copy of the article "When Will Farm Chemicals Come Into Their Own?", as offered in the October issue of the Distribution Data Gueid #109.128.

Very truly yours,
ANN MCDONALD
UNION CARBIDE CHEMICALS CO.

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- To adapt Research to Sales Planning
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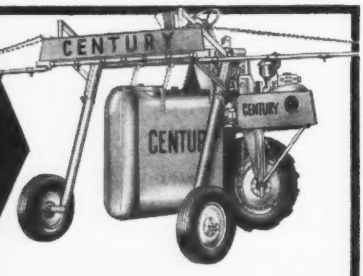

Yes, you can use Century's Self-Propelled Sprayer for all spray jobs on your farm, and make money custom spraying for your neighbors! Century's High-Clearance unit shown above with 8-row heavy duty sprayer and 185-gal. tank is ideal combination for fast weed and insect control in high crops. Use boom in low position for low row crops, small grain, pasture and fence rows. It's always ready and doesn't tie up a tractor.

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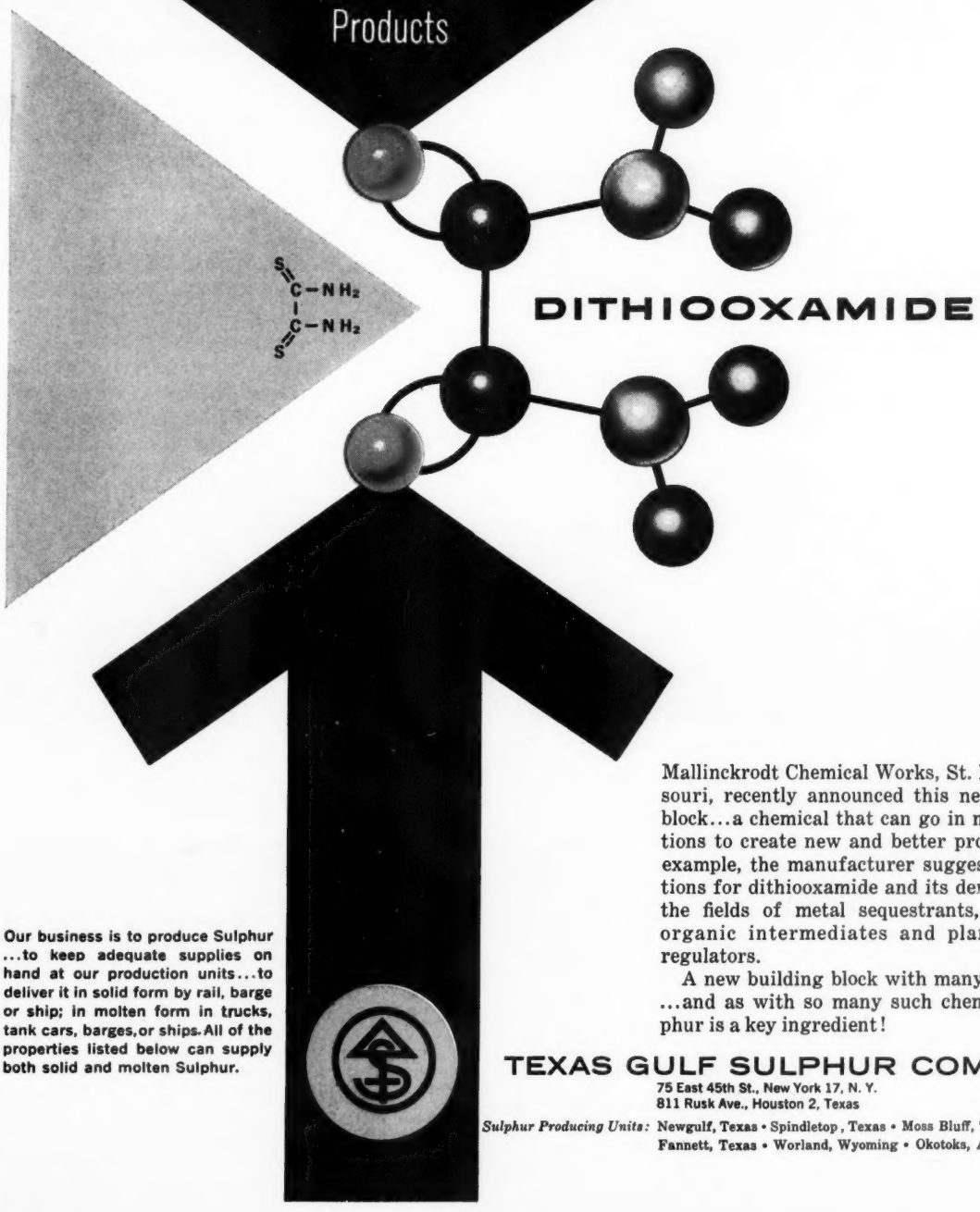

Mallinckrodt Chemical Works, St. Louis, Missouri, recently announced this new building block...a chemical that can go in many directions to create new and better products. For example, the manufacturer suggests applications for dithiooxamide and its derivatives in the fields of metal sequestrants, pigments, organic intermediates and plant growth regulators.

A new building block with many potentials ...and as with so many such chemicals, Sulphur is a key ingredient!

Our business is to produce Sulphur ...to keep adequate supplies on hand at our production units...to deliver it in solid form by rail, barge or ship; in molten form in trucks, tank cars, barges, or ships. All of the properties listed below can supply both solid and molten Sulphur.

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For example: the Planalyzer that simplifies charting sales activities twelve months in advance. There's also the farmer-dealer kit which includes practically every sales aid you need to hold a successful farmer-dealer meeting. How to advertise and promote your product is outlined in a down-to-earth manner in a 68-page booklet.

Other ways he helps include how to determine the potential of your market and how to find prospects . . . how to select and assess your salesmen. Still other IMC helps give you promotional material imprinted with your brand name . . . crop packages, fertility charts. Transportation is vital in IMC's marketing program . . . new methods and techniques that help lower your costs and provide a variety of assistance in handling and moving finished goods or ingredients.

But going beyond this, IMC has presented sales sessions aimed specifically at training fertilizer manufacturers' salesmen in more effective methods. The program covered ten principal cities and is further supported by sales assistance at your plant for your individual salesmen.

This *total marketing service* is unique . . . expressing the full-function assistance of a full-line company. It is geared to apply in all phases of your operation — nitrogen, phosphorus or potash — through total technical service, research, merchandising.

Your IMC representative can bring this total service to you, and help you plan for higher profit. Just give him a call.

Products for growth* IMC

*Trademark

AGRICULTURAL CHEMICALS DIVISION

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

Administrative Center: Skokie, Illinois

Help in lining up materials, talks, and facts for meetings is part of IMC's marketing assistance.

Market analysis aid is another important service from IMC's Man With a Marketing Mission.

WHAT'S DOING IN THE INDUSTRY

F
C

AVADEX: NEW WILD OAT HERBICIDE FROM MONSANTO

Monsanto Chemical Co. reports that application has been made for Canadian registration and sale of Avadex, a wild oat herbicide, in 1960 as a product of Monsanto Canada Ltd. On Dec. 7, the western section of Canada's National Weed Committee, meeting in Winnipeg, Manitoba, officially recommended the product for registration and sale in Canada in 1960 as a wild oat control in both small grains and row crops.

Chemically identified as 2,3-dichloroallyl diisopropylthiolcarbamate, Avadex will be extensively field tested this year in the northern prairie states to obtain data required by USDA before the product can be offered for sale in the U. S.

Identified as CP15336, Avadex performed successfully on more than 190 acres of demonstration plots on farms in Alberta, Saskatchewan and Manitoba and in experimental plots at 10 Canadian universities and experimental farms, Monsanto said. The product gave 90–98 per cent control of wild oats consistently in wheat, barley, flax and sugar beets under actual farm conditions when applied at rates of one and one-half to two pounds per acre as a preplanting treatment. Radio-tracer studies and chemical analyses of crops grown on treated soils show that Avadex leaves no residues in crops, even when applied at more than double the rate recommended for efficient wild oat control.

REORGANIZATION AT KICKAPOO FERTILIZERS

Management reorganization of Kickapoo Fertilizers, Stevens Point, Wis., has been completed, and three new properties have been acquired as part of 1960 expansion plans, the company reports.

R. B. Baldridge, executive vice president and general manager, said that general offices for the Midwestern Phosphate Corp. and Midwestern Farm Fertilizers, Inc. has been moved to Stevens Point. The two firms operate under "Kickapoo Fertilizer" tradename. General offices formerly were in Hillsboro, Wis.

Philip Q. Sawin, Madison, Wis., is president; A. D. Strobhar, Savannah, Ga., vice president; and Baldridge also serves as secretary-treasurer.

Kickapoo has added 30 per cent to production facilities at both Stevens Point and Hillsboro plants this year according to Baldridge. Warehousing facilities are currently being installed in Shiocton, Gratiot and Owen, Wis., and production facilities are expected to be begun at these sites in 1960.

Meeting Highlights

THIS MONTH

Northeastern Weed Control Conference

Hotel New Yorker, New York City

Jan. 6. The morning general session includes discussions on granular herbicides and application equipment, promising new weed control chemicals, and joint action by herbicide users on public acceptance. E. M. Rahn of the University of Delaware, will preside.

The afternoon session—with L. G. Utter of Diamond Alkali Co., Conference President, presiding—will hear papers on a national organization for weed control, effect of urea herbicides on photo-synthesis, microbial decomposition of herbicides in the soil, soybean response to substituted benzoic acids, and a program for determining losses due to weeds.

There will be a program on new herbicides from industry during the evening.

Jan. 7. Sectional meetings on Horticultural Crops; Agronomic Crops; Industrial and Highways; Public Health; and Aquatics, Conservation and Forestry will be held during the morning and afternoon. A business meeting is scheduled for 11 a.m.

Jan. 8. During the morning, there will be meetings of the Horticultural Crops, Agronomic Crops, and Industrial Highways sections.

NATA ELECTS NOLEN AS VICE PRES.—APPLICATION

Lloyd P. Nolen, Mercedes Dusting Service, Mercedes, Texas was elected vice president—application during the recent National Aviation Trades Association convention in New Orleans.

Regional vice presidents elected included: Region I—A. M. Bertolet, Reading Aviation Service, Reading, Pa.; Region II—Cy Emery, Magnolia Aviation Co., Laurel, Miss.; Region III—George Edgcumbe, Tufts-Edgcumbe, Inc., Elgin, Ill.; Region IV—Ralph Crosnoe, Red River Aero Dusting Co., Texarkana, Tex.; Region V—Walter H. Ball, Dakota Aviation Co., Huron, S.D.; Region VI—Henry Moore, Moore Aviation, Tulare, Calif.; and Region VII—H. P. Hill, Idaho Aviation Center, Idaho Falls, Ida

Richard Reade, of Mid-Continent Aerial Sprayers, Hayti, Mo., was named vice president—membership.

NATA named Robert E. Monroe as executive director to fill the vacancy created by the death of Charles A. Parker last April. Monroe has been acting in this capacity for the last six months and has been with NATA national office for one and one-half years.

Group Passes Resolutions

Among resolutions passed by the association were those calling for closer cooperation with Civil Air Patrol; a survey of services provided by NATA members; continuation of efforts to secure relief from discriminatory provisions of the Federal Wage Fair Labor Standards Act; establishment of an association public relations program and establishment of a uniform standards for safe general aviation operating procedures. The association stated its opposition to the entry of the federal government into contracting for aerial application of farm chemicals to cultivated crops.

NATA's 21st annual convention will be in Oklahoma City at the Oklahoma Biltmore Hotel, Dec. 6–8.

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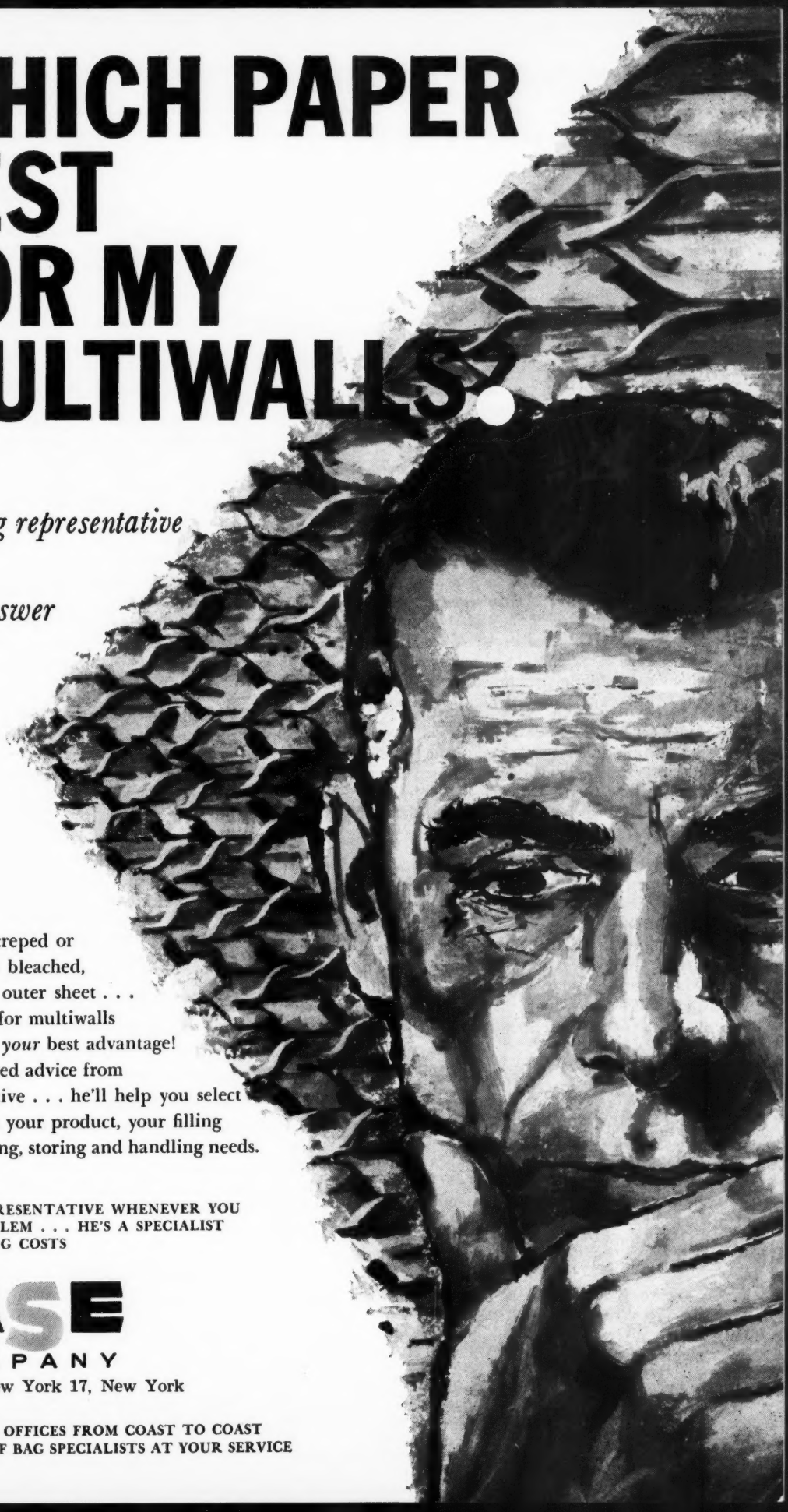

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WASHINGTON VIEWPOINT

F C

The new session of Congress may be one of the most "investigatingest" in years. A volatile area for investigation is chemicals in or on food.

Only essential—and non-partisan—farm program changes—are expected this year.

A new boom in government regulation now is in the making. Congressional hearings, cabinet-level press conferences, and behind-the-scenes planning of the past few months were only preliminary skirmishes in the battles to come in the months ahead. While this applies to many industries, from television programming to grocery retailing, it is of particular importance to the chemical industry.

The new session of Congress, now getting underway, means business. It's shaping up into one of the most "investigatingest" sessions in many years. Some investigations have been planned for some time, such as into administered prices. Others have been sparked by the general wave of sensational disclosures this fall. For example, planned hearings into chemical use in food production stemmed directly from the unexpected Flemming press conference on aminotriazole.

Interest in probes this year is heightened by the approaching presidential election. Headline-smashing disclosures are being sought this year not only for their value in writing new legislation, but for the possible stature to be gained by publicized investigating lawmakers.

But investigations into possible wrong-doing or inadequacy of government regulations—for whatever motivation—will lead to more, or revised, government regulations. It's the beginning of a new era in which government controls on all sorts of industries will make themselves felt even more than in the past. Many industries have developed so rapidly during the past 5–10 years that they have outgrown previous rules. New ones are sought to keep abreast of change.

Most volatile area for investigation is chemicals in or on food, by reason of increasing use of new chemicals at all levels of the food chain. One reason for this, according to many industry observers, is that consumers generally are unfamiliar with industry's continuing multi-million dollar programs to assure safety. In short, there is growing recognition that the chemical industry, particularly the farm chemicals industry, has not sold itself in the area in which it now needs understanding: The vast, and politically potent consumer segment.

Secretary Flemming is responsible not only for Congress' new interest in chemical residues in food, but in giving new life—and perhaps new daring—to officials of the Food & Drug Administration. In other words, where FDA tread softly—and cooperatively—in the realm of farm chemicals in the past, it now will be less inclined to patience. FDA officials, however, can still be expected to cooperate whenever and wherever possible within the framework of the "new look."

The FDA now has been given the "break" many people in and out of government have been hoping it would get. That is, there was a need for some dramatic development to point out that while FDA's authority was growing up with technological changes in industry, its manpower was lagging behind. The cranberry scare was the dramatic event long awaited by many. The use of "scare" tactics is a familiar one employed by some Defense Department officials in the past to encourage Congress to provide more funds, or to inaugurate new programs. Doubtless it will succeed for the master-minds at the Department of Health, Education & Welfare.

Other FDA rulings in the wind: Studies now are being conducted on the use of chemicals on corn. This one again involves aminotriazole. FDA insiders say that if any residue of this compound, or similar one, is found on corn, the agency will be forced to bar the movement of such grain in interstate commerce. Also, fumigants used on food grain seeds travelling in interstate shipment are being eyed for action. Additionally, FDA wants to ban heptachlor residues on grain and forage crops, as well as on fruits and vegetables. FDA says that an oxide, expoxide, forms on crops which is even more toxic than heptachlor. The residue turns up in meat and milk when fed to livestock. FDA wants the ban until further testing has proven safety.

Farm program changes this year are expected to be at a minimum. Only changes considered essential—and non-partisan—are likely to be made.

The Eisenhower-Benson approach to Congress on the farm program will stress a major revision in what they consider to be the Number 1 surplus problem: Wheat. Their approach is to gear wheat price supports to market price averages, which would reduce wheat supports to about $1.25 per bushel over the next few years. They also advocate complete removal of acre allotments and marketing quotas.

Administration's strongest farm supporter, the big Farm Bureau, is advocating a new switch to this general approach. Farm Bureau suggests that wheat price supports be geared to corn supports. In the first year of operation, wheat drops would be set at 120% of the corn support. This would mean wheat props at $1.30 per bushel, 50c below current levels. Neither of these plans is likely to be accepted by Con-

3 MEN DO WORK OF 4, and cut material handling costs 15%

in switch to Michigan Tractor Shovels

By equipping standard 16 cu ft Tractor Shovels with ¾ yd buckets, Growers Fertilizer Co-operative, Lake Alfred, Florida, has cut handling costs 15 per cent.

Growers' problem had been a common one . . . how to put greater efficiency into a system where weighing, mixing, and truck loading all were completely automatic. Only in such Tractor Shovel operations as unloading box cars, storing material, and feeding hoppers could there be much improvement.

With this limitation, plant manager Ed Shores' first thought was to get bigger machines. It was about time to trade in his four old 15 cu ft Tractor Shovels anyhow. But an increase of even one size *range* would keep the Tractor Shovels from readily passing through aisles, box car doors, and among some of the 38 bins (which ranged from 40 to 500 tons in capacity).

Then, a different *make* of Tractor Shovel came to mind. This machine—a 16 cubic ft power shift-torque converter Michigan Model 12B—would help boost production simply by preventing the end-of-shift fatigue that comes from constant clutching and declutching. Too, its extra cubic foot of capacity could up production—though only another 100 lbs or so per load.

That's when the key idea was born. Fertilizer is, after all, a relatively light material—the heaviest Growers Co-op handles weighs 110 lbs per cu ft. Perhaps the Michigan Model 12B could swing a bigger bucket, thought Mr. Shores. How about the standard Clark-built ¾ yarder? Fully heaped, it would carry 2230 lbs—470 lbs (27%) more than could the 16 ft bucket. Yet, its load would be well under rig's lift-and-carry capacity of 3,000 lbs. And its extra width, 4 inches, would cause no maneuverability problems.

A three-day on-the-job trial resulted. Michigan and the ¾ yd bucket performed "with highest honors." Loads weighed out at 2200 lbs or better. Each 40 ton box car was unloaded in about 1½ hours. Feeding the hopper from a stockpile 40 feet away, the 12B delivered 77 tons of fertilizer per 50-minute hour. With the fatigue factor reduced, operator made more runs in a day.

Result . . . the Co-op ordered three new Michigans to replace the four old machines.

Today, the combination of eliminating one Tractor Shovel and getting more production from each machine has provided the company with an over-all cost saving of 15 per cent! Yearly output, with only 12 men, is up to 100,000 tons, 700 grades of fertilizer, per season.

Perhaps the Model 12B Michigan can give you similar economies. Test one in your plant for proof—using the size bucket, 6 to 27 cubic ft, which best fits your material, job conditions, and production needs. Write us to arrange the details.

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What's Coming Next Month

Have you ever watched the famous duo, Bohlen and Beale of Iowa State College, present merchandising information before a fertilizer group? If so, can you imagine Beale *without* Bohlen—or vice versa? As with Gilbert and Sullivan, we've come to think of these two "artists" as inseparable. They aren't the only people to make good use of the flannelboard as a means of presenting material. But there's a moral to their story from which we think you'll profit: they do the job *just a little bit better*—so well, in fact, that their *approach* is known throughout the agricultural world.

This month we're starting our second year with a new approach which is different from anything in the farm chemicals publishing field. Our aim in 1960: *to do the job just a little bit better.*

■ MARKETING IN THE 60's—III

John Sargent adds to our series when he discusses the adaptation of research to sales planning. Participants of FCMS sat up and took notice when the author said that many sales managers do not recognize the unusual opportunity offered them by the annual sales plan and forecast. Sargent will point out several ways in which this activity can pay off for the sales manager. This discussion is sure to help round out your marketing program.

■ BETTER DEALER MEETINGS

"Good dealer meetings are the result of good planning." Author Hartzler shows how to handle a situation that has been a "sore thumb" for many of us. This is a logical follow-up to his plan for sales meetings.

■ COMPLAINTS TO SALES

Pollock comes through again. Our author of the "Successful Salesmanship" series which has run since last May, presents the art of changing gripes into sales. Complaints don't have to get your salesmen down. This article is must reading next month.

. . . in the new

FARM CHEMICALS EPA

WASHINGTON VIEWPOINT

gress. On the other hand, Democrats' proposals for more stringent controls coupled with a scheme of direct government payments to farmers—while they may clear Congress—are certain of veto.

Conservation programs are to get a big play this year. Secretary Benson is advocating an expansion of the Conservation Reserve, which pays farmers land rent for from 5 to 10 years for land retirement. But Democrats, and some Republicans, want a bigger program than the Administration's modest increase. Many favor doubling the present amount of land retired to about 60 million. They have support from unexpected sources, such as, for example, New York Governor, Rockefeller.

The Administration once again is advocating a big reduction in the Agricultural Conservation Program (ACP). It also wants to put it under the control of Soil Bank officials. This program pays out $250 million annually to farmers for applying recommended conservation practices to their land. Formerly, a sizeable portion of the funds were used to pay for fertilizer and lime practices, but this has dwindled considerably under various USDA rule changes. A change in the ACP program is considered political dynamite, and nothing is likely to be done.

Farm purchasing power in 1960 and 1961 will be down considerably from current levels. It means more competition for industry selling the farm market. The squeeze on farmers is coming from two directions:

First—Gross farm income this year is down approximately one-half billion dollars from 1958, with another half billion drop expected in 1960. Net farm income in 1959 and 1960 is forecast by USDA at almost $3 billion below the $13.1 billion of 1958. This means that farmers will have less actual dollars to spend.

Second—Farm purchasing power is expected to continue to shrink. The only available measure of farm purchasing power available is the USDA's parity ratio which measures the amount of production goods farmers can buy with the returns per unit of sales. This year, the parity ratio is down 7 per cent from last year. Standing at 79%, purchasing power on this basis is the lowest since 1950. Moreover, USDA experts are predicting a further decline in 1960. They expect it to fall to about 74% of parity by the end of 1960.

Thus, not only will farmers have less actual cash on hand, but the amount of production goods they'll be able to buy with what cash they do have will be down. This situation is likely to be felt most and hardest in the farm machinery and equipment market, for which a reduction in sales is expected.

Fertilizer sales also are expected to feel the impact. For example, USDA predicts that consumption in 1960 will be held to this year's levels. In other words, the 10–15% increase chalked up this year is not to be expected in 1960. Taking it one step farther: If official predictions for 1960 hold true, what will be the effect on the fertilizer market in the spring of 1961?

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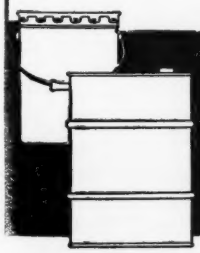

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How to A

By TED POLLOCK

FOR some strange reason, many salesmen—who can present a flawless case for their products or services and calmly overcome the toughest of objections—suddenly flounder at the point of pay-off: asking for what the prospect knows perfectly well they are there to get—the order.

Yet, by common consent, asking for the order is the logical wind-up of everything that has preceded it, from locating the prospect to giving the demonstration. In a business sense, it is the salesman's sole justification for existing. Until he actually rings up a sale, he has not begun to earn his keep. And since few prospects volunteer their orders, the salesman seldom rings up a sale without asking for it.

But it is one thing to ask for the order, quite another to ask in a way that gets it.

Of the many tactics used to make effectual requests for the order, these are the runaway favorites:

THE ASSUMPTIVE TECHNIQUE

The principle behind this approach is a sound one: people are subject to a psychological "law of inertia." At rest, they tend to stay at rest.

Translated into selling terms, this means that it is easier to get tacit approval of your proposition from a prospect than a verbalized "Yes."

Nor does this "tacit approval" need be so obvious as an affirmative nod of the head. Frequently, it is simply the *absence* of a clear-cut "No."

In practice, it works this way: you, the salesman, do or say something that the prospect must undo or deny. If he fails to act, you *assume his approval* and take the next step toward getting his signature on the order.

For example, you sell automobiles. A prospect has shown interest in your line but makes no move to buy. You have asked enough questions to determine his needs and decide to ask for the order through the Assumptive Technique.

So you say, "With those lively youngsters of yours, you'll undoubtedly want the two-door model—no handles to play around with in the back seat."

If he doesn't contradict you, you assume his agreement with your suggestion—and continue.

"For your wife's convenience, I imagine automatic transmission is the ticket."

If he still remains silent, you work your way through several such specifics. As his tacit approval builds up, you take the next big step—entering the specifics on your order blank. Unless he cries, "Whoa!" you've asked for the order and obtained his consent. This is because you have done something that the prospect must stop you from doing. You have put the "law of inertia" to work for you.

Or, you represent a packaging firm. In your prospect's office, you have—via the Assumptive Technique—narrowed down the package you hope to sell him. You have discussed materials, size, design, color, quantity. You are ready for the big plunge, asking for the order.

"I'm almost positive we can get this into production by the fifteenth," you begin. "But to make sure, I'd like to check with our chief engineer. May I use your telephone?"

If the prospect doesn't object to your making the call, you're in.

"It's a good idea to introduce your order blank early in the game," adds Robert M. Parsons, sales representative for Anaconda Aluminum Co. "That way, you condition your prospect to the sight of it and let him know that filling it out is a logical part of your presentation. If you wait until the end of your presentation to produce it, though, it can have a jarring effect, as if you were saying, 'Now I'm going to see if you'll buy.' In a subtle way, the order blank—taken out shortly after you arrive—implies, 'When you've heard what you stand to gain by signing up for this product, you'll be wanting me.' It's a symbol of the salesman's confidence."

The important thing to remember about "inertial selling" is this: people, like electricity, take the course of least resistance. Do something that they must stop you from doing and the odds are—they won't.

If they *really* aren't ready to buy, they'll let you know soon enough. But if they are merely hesitant or a little unsure of themselves, you can do them—and yourself—a king-size favor by harnessing the "law of inertia."

THE "HAPPY DILEMMA" TECHNIQUE

First cousin to the Assumptive Technique, this approach also takes for granted that the prospect is going to buy. But instead of depending on his *silent* approval, the "Happy Dilemma" Technique actively encourages his vocal participation.

ASK for the order...

and GET IT!

There's an art to making your prospect say "O.K". And here, in the ninth of an FC series on successful salesmanship, the author reveals severat effective techniques.

The salesman simply provides the prospect with a choice of two alternatives, either one of which commits him to buy.

"Shall we address the books to you—or your child?" asks the encyclopedia salesman.

"Would you prefer the 12-month plan—or the 18-month one?" asks the representative of a swimming pool manufacturer.

"Will you want the deed registered in your wife's name—or jointly?" asks the real estate agent.

"Would you want them shipped here—or to your Portland plant?" asks the lift-truck salesman.

No matter which alternative the prospect chooses, each expression of preference moves him perceptibly closer to the ultimate goal—a purchase. Having made a series of *minor* decisions, his confidence in himself mounts until he realizes that—in effect—he has made the *major* decision—to buy.

It only remains to transfer his choices to your order form.

THE PRE-WRITTEN ORDER

Also related to the Assumptive Technique, this highly imaginative, immensely effective approach asks for the order in a bold—yet subtle—way.

The salesman comes to the prospect armed with nothing less than an order form that is already filled out. He must, of course, be prepared to explain how he determined the size and make-up of the order, but if his reasoning is sound and he avoids any appearance of highhandedness, he stands an excellent chance of landing the order in record time.

Salesmen for W. A Taylor and Co. wine importers, for example, often call on their customers with a pre-written order which they introduce in this way: "Ed, I've made a careful study of your purchases over the past 12 months and taken into consideration the increased demand for our line that you can expect from our winter promotion campaign. Here's a line-up that I think will meet your requirements. How does it look to you?"

"The salesman should always invite his customers to pass judgment on a pre-written order," advises nanager of institutional sales Edward De Grandmont. "Otherwise, he risks giving the impression of trying to bulldoze his way to a sale. No customer is going to stand for that.

"But if you keep a pre-written order realistic and offer the customer an opportunity to amend it, you accomplish two things. You gain his confidence in any future suggestions you may make and you give him the feeling that he has collaborated on the order. He accepts it as *his* decision, *his* order.

"Even if he does make some changes in the items and quantities listed, you walk out with what you came for—the order."

Sometimes, the salesman can convince his prospect to accept the pre-written order on the basis of simple mathematics.

Thus, a promotion goods salesman has been notably successful in placing his merchandise in supermarkets throughout the country with this approach: "We've analyzed stores of comparable sales volume, Mr. Jones and, based on their experiences, we know that for every $1000 worth of business done, you can reasonably expect to sell $80 worth of our merchandise.

THE OTHER SIDE OF INERTIA

If people who are at rest tend to stay at rest, it is equally true that people who are moved tend to stay in motion.

For the salesman, this means an additional technique for getting a prospect to commit himself. Instead of relying on his *lack* of action to take him a step closer to signing on the dotted line, try getting him to *do* something that may be interpreted as approval of your proposition. For example,

▶ "Would you be good enought to ask your secretary to come in and try this machine herself?"

▶ "If you'll get me those figures, I can give you an estimate."

▶ "Could you find out where the installation would be made?"

If he does what you ask, uncap your pen. It won't be long.

I have the figures for your store right here and a suitably adjusted order awaiting your okay."

"Since most buyers lack experience with my line and haven't the slightest idea of how much to order at first," the salesman reports, "they appreciate my calculations and frequently take my advice."

A salesman for a chemicals firm always makes a point of writing up a special order for his customers whenever a price rise is imminent.

"I think you'll probably want to stock up on these items," he tells them as he produces the order, then explains why. Grateful, they usually do.

Properly handled, the pre-written order provides the salesman with a unique opportunity to be of service to his customers and prospects. It can help the indecisive man to make up his mind, increase his profits, save time all around.

But the salesman who chooses to use the pre-written order as an order-asking device must be prepared to assume the responsibilities that go along with it. He must

▶ Know what his customer needs.

▶ Be prepared to defend his recommendations

▶ Be willing to shoulder the blame, should those recommendations backfire.

"THE DEADLINE IS—NOW!"

If you give a man a reason for buying immediately that is compelling, plausible and believable, he will give you the order.

That is the working hypothesis behind this technique. By creating a sense of urgency a climate of "Now-or-Never," you dispose of the many minor—often picayune—considerations that plague the wavering prospect and confront him instead with bedrock basic alternatives—either he buys now or forfeits the opportunity to buy—for a time, at least.

Because this approach must have a solid basis in fact and because its unskillful use can smack of high pressure selling, it should be used with extreme caution. Used honestly and with discretion, however it can be a most effective order-getter.

Some examples of the Deadline-Is-Now Technique

"We only have five in stock. How many would you want?"

"Before I offer this exclusive to any other dealer in town, I'd like to give you first crack at it."

"We seldom get a used car in such top-notch condition. It won't be hard to sell that baby."

"This offer is good only for three more days. Don't you think it would be to your advantage to order now?"

Leonard Denbin, sales representative for Henry Glass and Co., fabrics manufacturer, sums up the technique: "No one likes to lose money—or an opportunity. The trick in using this method successfully is to establish beyond a shadow of a doubt that the prospect will be doing just that if he doesn't act at once.

"But the salesman must be 100 per cent on the level. You can fool a customer just once. If you can't offer a *legitimate* reason for immediate action, don't offer any at all. There are other ways to ask for the order."

ASK FOR IT

There are occasions when it doesn't pay to be too ingenious in requesting the order. Time may be limited. The prospect may not nibble at your subtler bait. For one reason or another, the situation may call for direct action.

Under those circumstances, many salesmen have found the best way to ask for the order is to—ask for the order.

"All I need is your okay on this form" has probably gotten more orders signed than any other technique in—or out—of the book. It offers two outstanding advantages. It can flow smoothly from a presentation. It is an unequivocal request for action by the prospect, not subject to misinterpretation.

Arthur E. Nack, sales manager, Eastern Division, Universal Match Corp., has discovered a minor variation of this technique that has proven most resultful.

"After a brief summary of the benefits of my proposition," he explains, "I'll say, 'Mr. Miller, we've done a lot of talking. You've indicated interest. *Now I'm asking you for my order.*'

"That simple phrase, 'my order,' seems to get under a prospect's skin. The reason, I think, is that I manage to generate a certain empathy between us during my presentation. Consequently, the prospect finds himself in a position where he must be actively opposed to what I'm selling in order to say no. Perhaps, too, 'my order' suggests my strong belief that I *deserve* to get it.

"One thing I know. The straightforward request for an order, made immediately after a recapitulation of benefits, can mean a 10 per cent increase in sales—or better.

"It doesn't take a mathematician to see how that can mean thousands of extra dollars to the salesman."

Which is just about the most persuasive argument you'll ever hear for a selling technique. ▲

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MARKETING

IN THE 60's: PART II

how to be a CONSTRUCTIVE CRITIC

of your present marketing program

By HECTOR LAZO*

Our national economy in the sixties will be a *marketing* economy. I see the possibility that those of us who have spent our lifetime in distribution will at long last start to apply some of the scientific management techniques that engineers and production people have been using. Perhaps in the decade that lies ahead we, too, will become successful marketing managers and match—or come close to matching—the advanced technology and skill of the manufacturing plant and the laboratory.

That means that we must have the same sort of stock-taking that has been generally applied to finance, production and personnel the past six decades.

The first job before us is to *reorient top management thinking.* A very large number of companies have given lip service to the so-called new marketing concept—the customer-oriented marketing concept.

But lip service is not enough, and will not be enough in these highly competitive years ahead. The Top Command of business must actually believe in the need for new marketing orientation and be willing to apply it to their individual businesses.

The importance of this top management thinking is brought out clearly when we attempt to answer the question before us:

HOW CAN WE constructively appraise our marketing effort? Before we can constructively measure, appraise or criticize anything we must first know *what the original objective was.*

Top management sets the overall objectives for the company. They set these objectives in the light of their own thinking, their own philosophy, their own principles of operation! Unless, therefore, we have the *thinking* of Top Management running parallel to the basic customer-oriented philosophy that Charles E. St. Thomas so clearly enunciated (December issue, page 17), we will not be able to set realistic standards for measuring the total marketing effort.

How well have we in marketing convinced our top management teams of this need? How much do our top management teams *actually believe* that the future of private enterprise business depends upon such a marketing philosophy? Until they do, and act upon it, we are merely swinging at windmills in our efforts to be constructive critics of our marketing programs!

WE MUST KNOW WHERE WE ARE HEADED

But let us say that the majority of the head men in your industry accept the truth of this new thinking. They still turn to you and say:

"We want you marketing people to tell the executive people to tell the executive department and the Board of Directors why we should spend more money, allot more people, increase the effort, and reorganize our company set-up to give marketing the importance you claim it deserves. What do we get for our money?"

That's precisely what we are here trying to determine. What do we get for our money? How can we measure the returns? How can we get more?

Taking the company's overall objectives, we formulate our marketing objectives . . . within that greater frame-work. Obviously, it would be futile for a marketing manager to create an organization to sell to every outlet in the country—*if top management has previously decided it will confine its business to the North Central States.*

The marketing objective must therefore first of all be realistic. It must be flexible enough to be able to roll with the punches. It must be challenging enough to motivate the people to their best effort. And it must be clear enough so that we can set up adequate standards to measure progress . . . spot weaknesses . . . improve performance.

We cannot adequately measure—which means we cannot constructively *criticize*—until we establish clearly and definitely what we are trying to accomplish. This one facet of constructive criticism takes

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on enormous importance when we try to apply it to specific components of marketing:

How do we measure the effectiveness of our advertising? How can we determine the effectiveness of our sales force? How can we establish how good our marketing research is? How can we cut down on the risk of failure in the introduction of new products? How can we answer the question Top Management wants to know—"what do we get for our money?"

Establish and answer these questions first: What are we trying to do? Where do we want to go? Where are we headed?

It has become abundantly clear that the failure of marketing to constructively criticize its accomplishments stems in a large number of cases from its own failure to set up clear objectives of *what it wants to accomplish.*

How can you ask "How good is my advertising?" unless you can state *beforehand* what you wanted that advertising to do? "How am I doing?" implies that you had a definite aim. We shoot at a target and we know that we hit a bull's eye *only because there is a bull's eye in the center of the target.*

Step No. 1 in building a framework for constructive criticism is to *define clearly what your goal is.*

Simply to make the statement that "we want every one of the 18,700 farm equipment dealers in the United States to sell 10 per cent more fertilizer in 1960" is hardly the type of specific marketing objective we are talking about. We must know specifically where, how much, and by what means we intend to try to reach specific levels of sales in specific markets by a specific time.

"*Are we set up to do this?*" In terms of company set-up, of people, of facilities, of men and money, *can* you reach those goals? A few years back a prominent rubber company determined that its marketing goal (short-term) was to "make the XYZ Distributors headquarters for all recap tire business." How would they do this? What did they have to do to accomplish it? What kind of personnel was needed to get the program in operation? What kind of headquarters and field organization was necessary to carry it out successfully? What kind of training did both the company employees and the dealers need before they could accomplish the purpose? Endless questions with chain reactions in many directions. In the end they set up a special organization within the company to handle the program which was carefully worked out step by step before it was sold to the distributors.

Step No. 2, *then is set up the proper organization.* It may be only one person, in smaller companies. But responsibility and authority are concentrated, definite objectives are established, and whoever is given the job knows precisely what the company wants to do, where, why, and by what time.

What are the general operating policies by which we hope to accomplish our objective? Let's review the policies we now have: sales, credit, pricing, trade channel, transportation, advertising and promotion. What are we doing now? Is that adequate? Too much? Too little? Why? Where are we weak? Why? What do we have to do to correct this weakness?

Policies are guides to action. They are the framework within which operators operate. If these policies are right, how about our methods, plans and procedures? Do our salesmen understand our policies clearly? Can they make the dealers understand them beyond a shadow of doubt? Because this step analyzes *what, who, where, why, how* and *when* our objectives are to be reached. Our methods and procedures may be outmoded; our policies may be inappropriate in the light of the new objectives; the validity of the assumptions on which we made our overall plans and based our policies may have been destroyed by changes in the market.

It seems superfluous to remind an audience as sophisticated in marketing as this one that company policies designed to develop a certain market and reach a certain market potential are guides to action *as of a given time and under given circumstances.* We as practical marketing people know that these circumstances, and the markets that result from these circumstances, are constantly changing. Our policies and our methods of successfully reaching those markets must either change, or be inadequate. No sales team can perform well with obsolete policies, obsolete methods, obsolete terms. The markets change, and the problems of satisfying those markets change. Too often in the past we have blamed our sales department for falling down on the job, when what was actually happening was that our management was supplying Model T Fords to salesmen competing against men using the high compression monsters we euphamistically refer to as "the low-priced three."

A total audit has to be made. Sales are not made in vacuum. Sales are not made independently of the other parts of the total sales effort.

Step No. 3: *Review our current policies, methods and procedures.* Are they up-to-date? Are they adequate? Are they realistic in the light of today's problem and tomorrow's goal? Are we trying to kill the modern market Goliath with a sling-shot? It is quite possible that this happened—but that was thousands of years ago. Since then we have had the invention of powder, the cannon, the machine gun and, unfortunately for the human race, the hydrogen bomb. An army full of Davids, with all their courage and devotion, would not get far in a modern struggle. Would you blame David—or would you try to equip him with a supersonic jet bomber? What weapons are you using to try to win this 1960 competitive fight?

Perhaps one of the greatest limitations on our ability to constructively measure our marketing performance is the fact that we limit our appraisal to *performance.* We are impatient to show results. We ask "How are our salesmen doing?" "What is our advertising doing?" "What good is it?" But we must recognize that all *performance* is carried out within the framework of company policies and company objectives; and that it is seldom indeed when the performers—the men who carry out these goals and policies—have a chance to set them. The frame-

work of direction, the stimulation and supervision under which the work is performed—these are set by management. Any constructive criticism of our marketing performance must therefore take a good long look at the ground rules as set by management. The short-comings may not be the fault of the performer at all.

Step No. 4: *By what standards do we measure what has been done, and who sets those standards?* Standards are values which represent the performance *expected*. The setting of these standards is probably the greatest difficulty in our way to constructive measurement of performance. This expectation of results to be achieved under specified conditions demands that you specify these conditions beforehand, and that you specify, too, how far along the road you want to be at a specific time, so that you can measure the proportion of the road covered as against the expected or anticipated distance.

If marketing were simply a matter of checking of miles covered, we would have little difficulty. Some marketing functions cannot be measured by numerical standards. Too often in the past we have measured a salesman's worth, for example, by the volume of business he brought in. Many firms have discovered that such a standard of measurement is neither adequate nor fair—not fair to the man, not fair to the company. There are such little matters as balanced product line sales, company profits and territorial potentials which modern sales management takes into account when it is appraising a salesman's total contribution to the company's success. So that very often, in marketing, we are unable to establish operating standards which can be measured with a tape rule or an arithmetic table.

How good is your advertising? Do you measure it in terms of units of the product sold? Ultimately, of course, all marketing effort must be measured by the

Check these twelve areas of marketing in

1) How did my sales force do?

a) Is it organized properly to cover the market adequately?
b) Is my sales effort properly distributed by types of salesmen, independent representatives, brokers or functional middlemen, agents?
c) Are the lines of communication between field sales force and headquarters what they should be? Do we understand each other fully and do we speak the same language?
d) Do my salesmen have adequate field supervision?
e) Do my supervisors have enough authority to match their responsibility?
f) Do my men cover the territory adequately, call on their accounts properly, often enough?
g) What are the results of our time and motion study among our salesmen . . . how do they divide their time, how can we improve on that?
h) What standards have we set up for measuring our salesmen's performance, and how good are these standards in the light of today's market requirements?
i) Is my current method of motivation (including my compensation method) proper, realistic, adequate?

2) How much did it cost to bring in the business?

a) What yardstick do we have for measuring the proper sales/cost ratio?
b) How did we do against that yardstick?
c) How does that compare with competition?
d) Where and how could we cut on these costs and still meet our objectives with our facilities?
e) Do I know how much we should be spending, given our volume of business, our objective, and our facilities for . . .
—Field sales?
—Advertising and promotion?
—Research?
—Product planning, product testing?
—Total overhead?
f) What method or system of cost controls do I have to be able to spot danger signals before they become serious problems?

3) My Market Position.

a) What is the total market potential for my product?
b) What share of this market do I control? why?
c) Is my share proportionately greater today than last year, five years ago? why?
d) What factors determine my share of the market?
e) What factors determine the **total** market, and how can I best forecast their trends?
f) What are my basic marketing policies, how adequate are they in the light of today's conditions, and what is competition doing about these basic policies in the industry? (e.g. policy of planned obsolescence, of market penetration, etc.)

4) My Product Line.

a) Do my present products meet the current needs and wants of my customers?
b) Is the quality, composition, style in line with current customer requirements or wants?
c) Is my product line adapted to the varying requirements of the varying sections of the country? (certainly soil requirements vary in New England, in Nebraska, in New Mexico.)
d) What about my product mix? properly balanced? too many items? too few? top-heavy with one kind or another?
e) Is my product being offered to the consumer in the most convenient pack, unit, price?
f) Does the user of my product know how to get the best use out of it?
g) Do dealers and distributors know, so they can inform the ultimate user?
h) Does my product meet today's advance requirements of economy, performance, safety, ease of handling?
i) Can I show my customers satisfactory return on their investment in competition with satisfactory substitutes?
j) Does my product incorporate the newest advances in technology, science, benefit to the user?

5) My New Product Policies.

a) Am I properly set up to develop new products?
b) Am I keeping up with the parade of new products, with innovation, technological advance?
c) Are my controls adequate to determine **beforehand** what these new products will do to production facilities? My pricing structure? The company profits? The effect this new product will have on my established products? On my customers?
d) Are my new products and new product plans based on adequate research to minimize the risk of failure?
e) Are my company's new product policies adequate in the light of current marketing requirements?
f) Are my company's research and development facilities adequate to meet the demands of present-day markets?

6) My Merchandising Policies.

a) Is my promotional effort enough and of the right kind to do what I want to do in 1960?
b) Am I allocating my promotional effort—dollars and manpower—according to market potentials?
c) What merchandising push do I put behind my different products, and why? (e.g. does the advertising on four of five products "carry the line"?)
d) On what basis do we formulate our advertising and promotion budget?

volume of successful (i.e. profitable) sales made by the company in a given time.

We recognize immediately that it is extremely difficult, if indeed not impossible today, to set standards of appraisal for every detailed aspect of the total marketing function. In many companies, indeed, the cost of such an attempt would be prohibitive and out of all proportion to any possible returns. In many smaller companies, appraisal or, if you will, constructive critism, is done on an informal, day-to-day basis without a purposeful program or a planned effort. Were you to speak to the heads of such businesses about formal audits, it is quite likely they would not know what you were talking about. Efficiency, as every manager in this room knows, is very often a subjective rather than an objective, measurable quantity.

When people in growing numbers ask the question: "Does distribution cost too much?", they are not really referring to the dollars and cents cost of distribution placed alongside of the dollars and cents cost of production. The real question is not the number of dollars it costs to get the products of a factory into the hands of the user, but *how well* is the service of distribution being performed, how efficient is the performer? Is the effort effective enough, socially and economically? Our yardstick, our standard by which we measure this effectiveness may indeed be a subjective rather than an objective one!

But even should we be able to hurdle this obstacle, we face others almost as difficult. Every industry has a definite growth cycle. Every producing company within that industry has entered that cycle at different times, therefore, in relation to that cycle, stands at a different point at any given time. Advertising and sales effort at one stage may not be appropriate for another. So that even if we have succeeded in establishing standards for criticism or

in appraising your program

e) How and why do we allocate our advertising budget among the various media and alternatives?
f) What methods have I developed to keep my sales force and my dealers informed of important changes in merchandising policy or programs?
g) What degree of cooperation have I been able to get from distributors and dealers, and why? how can I improve this?

7) My Distribution Set-up.

a) Does my dealer set-up reflect the vast changes that have taken place in and among distribution channels in the past 5 years? The changes that are reasonably expected in the next five?
b) Does my distribution set-up adequately reflect the changes in population, buying habits, shifts in income among my customers?
c) Do I have adequate dealer audit information to tell me the relative profitablity of each type of dealer, each size and location of dealer, and discernable trends?
d) Is my total selling effort properly distributed by territories on the basis of territorial potentials?
e) Is my support to my dealer set-up adequate? too much? too expensive? Is it the best that I can do?
f) Does my current distribution set-up adequately cover the market? do I have some blind spots? what would it take to correct them?
g) Are my own distribution policies (e.g. selective distribution, exclusive territories, etc.) the proper ones under today's conditions?

8) My Advertising and Promotion.

a) Is my advertising carrying the story I want to tell about my products, my company?
b) Does my advertising carry the information my customers want? does it satisfy their needs?
c) Is my advertising believable, forceful?
d) Are we using the proper media to reach MY consumers?
e) Are we exploiting the plusses of our advertising with our dealers, our customers, our own salesmen?
f) Are we using the right kind of supporting promotional material, in the right places, at the right time? is the quantity enough? too much?
g) What standards are we now using to measure the effectiveness of our advertising?

9) The Package.

a) Does our package reflect modern trends in style, color, protection, user convenience?
b) Is our package the most effective one from the point of view of the user?
c) Are we using the most modern and best packaging materials?

10) My Pricing Policies.

a) Is the price of our merchandise realistic in today's markets?
b) Is my basic pricing structure the right one today?
c) Are my sales terms in line with modern practice, do they reflect modern trends and trade practices?
d) Do my prices fully reflect the changing patterns of distribution and consumer buying habits?
e) Are my pricing policies in line with those of competition? Does the competitor have an advantage because of different pricing policies, terms, practices?
f) Do my prices fully recover actual costs?

11) My Company's Image.

a) Are my efforts at Public Relations and image building in line with current competitive emphasis on company image?
b) Are my methods modern, adequate and productive?
c) Does my company have a clearcut policy on what it wishes to establish as its "company image," in specific terms, so that we might establish specific programs to attain and maintain such an image?
d) Do all the "points of contact" with dealers and the public help to create such an image? (e.g. my package, my label, my marketing slogan, my brand, my promotional efforts, my salesmen?)
e) What effort have we made to establish just what our current company image is among dealers and users, and why? how long ago?

12) Our staff Operations.

a) Do I have a modern set-up to meet modern marketing requirements? How long ago since we reorganized to meet changed conditions?
b) Does everyone in my staff understand clearly what his duties and responsibilities are?
c) Is the relationship between my people the most desirable one to achieve maximum efficiency and performance?
d) Are we using the most modern tools in the performance of our respective duties?
e) Are we basing all operations in our department on facts as established by research?
f) Are decisions and plans being made on the basis of facts or are we still operating by guesswork and preconceived opinions?
g) Do we have adequate provisions for training and retraining our salesmen in the light of constantly changing markets and conditions?
h) Is our position one of progressive flux to roll with the punches, or are we set, resisting change, waiting to be forced into it by competition?
i) Are we innovators, followers, or stand-patters?

measurement adequate for 1959, they may not be adequate in 1960, or 1961; and certainly not in 1965.

It is no exaggeration to say that our marketing job was changed and increased proportionately in these past 10 years. And it isn't a simple question as to where your company stands within an industry's cycle, but also of where the industry stands in the total national economy. Is yours a stable and repeat industry? Is it a growth industry? Is it a declining industry? Your performance as a company within an industry will depend to no small extent upon the position and performance of the industry as a whole in the total national economy of the nation.

But we are not through with the problems of marketing evaluation yet!

Before we can constructively criticize the marketing effort, *we must identify the conditions under which the particular company is operating.* Some of these conditions are internal, and can, by analysis, be fairly well pinpointed. But some are external, and even though outside of the company, will often affect only that one company, and not its competitors.

Let me cite for example two large organizations, each a very important marketer of universally desired household appliances. The General Electric Co. and Sears-Roebuck, both sell household appliances, and probably would be listed among the top three or four in volume of business. But Sears sells through a limited number of company-owned outlets, whose policies, methods of operation, profit ratios, and practices are closely controlled by management; GE sells through tens of thousands of household appliance dealers, independent operators who sell what they want, when they want, and at prices they choose or accept, as they please. Obviously, the outside forces which affect the performance of GE are entirely different from those which affect the performance of Sears-Roebuck. Changes in these conditions will affect each company differently.

And before management can appraise performance, it must examine and measure those factors which affect performance, and over which the performer has little if any control.

BUT MANAGEMENT WANTS TO KNOW

Still, we come back to our starting point, that management *wants to know* . . . wants to know where we stand, what good our advertising or promotion does, what marketing can report about our salesmen, why we should invest more in researching the market and its potentials, how we, as marketing people, propose to reverse that sales curve, how we propose to profitably dispose of that excess production capacity that over-enthusiastic forecasts saddled us with five or ten years ago.

We in marketing management can no longer put off our answers. We are charged with the responsibility of giving management some criteria for measuring our whole performance; and after that, establishing for management an acceptable checklist of possible trouble areas so we may spot and correct them, and thus improve performance, of each major component of marketing.

Let me therefore in the balance of the time at my disposal give you ten criteria by which you might measure the overall marketing performance in 1960, and then run down quickly some 12 areas of marketing functions which require critical appraisal (pages 20-21).

10 Criteria for Measuring the Total Performance in Marketing.

1) How many new products have we introduced successfully in the past 10 years? How many failed? Why?
   This measures the performance of our Product Planning set-up.
2) How successful have we been in keeping a balanced and profitable inventory (i.e. keeping the number of items down without running out of stock; having enough inventory to take care of business requirements without tying up necessary working capital).
   Measures inventory policy and controls.
3) How successful have we been in developing promotable people?
   Measures our training and development program.
4) What is the morale of our sales force in comparison with that of our competitors? Why?
   Measures our leadership and motivation program.
5) What is the ratio of sales to advertising as compared with industry averages, or with those of our competitor? Why?
6) What are our total selling and distribution costs, and what are the trends? Why?
   5 and 6 measure our marketing cost ratios, our cost controls.
7) How accurately have we been able to forecast so as to base our requirements on terms of supplies, raw material, production schedules, operating capital on such forecasts?
   Measures our research and forecasting set-up and effectiveness.
8) How well have we established the total marketing potential, our share of the market, the degree of market coverage we have attained, our current sales volume as measured by such potential, and what we might do to improve?
   Measures the effectiveness of our marketing research.
9) What has been our profit contribution to the company's total operations?
   Measures our total effectiveness.
10) What about lost accounts, unsold accounts, lost orders? Why?
    Measures trade channel and distribution policies and performance.

APPRAISING THE TOTAL PERFORMANCE

Let me remind you that while we might appraise the total performance—that is, critically measure our total marketing program—by a list of perhaps 10 criteria, we will still be faced with the much greater challenge of measuring each major marketing component. The applicable standards will vary greatly company by company, competitor by competitor, even if both are in the same basic industry. ▲

How Market Research Can Work for YOU

Before developing meaningful marketing plans, we must know who buys our products, where he is located, what he uses them for, what he buys as alternatives, and the share of the market for our products and our competitors. Here are results of a Doane study comparing marketing results for two similar products for a 2-year period.

AT THE recent Farm Chemicals Marketing Seminar (FCMS), sponsored by this magazine, the point was well made that marketing efficiencies are imperative for profit-making in today's competitive economy.

Familiarity with the market-place is essential. We must know and understand the consumers of the products we offer. Marketing efficiency develops only through a thorough and complete knowledge of one's own product(s) as well as competitive products.

We cannot proceed on an intelligent course of action and develop meaningful plans without knowing who buys our products, where he is located, what he uses them for, what he buys as alternative or competitive products, and the share of market for our products and our competitors.

HOW TO GET THE INFORMATION

There are a number of ways such information can be obtained. Reports from salesmen, industry conferences, data from suppliers have all been used extensively by chemical companies in the past. Another source of marketing information is through a marketing research department within the company or through an independent organization specializing in this type of work.

As an illustration of the latter, the herbicide market surveys conducted by Doane Agricultural Service are a good example of the type of information that can be obtained through well-planned marketing research. Doane's 1958 study was reported in this magazine in the July issue and the 1959 study in the December issue. We have asked Doane to furnish an example of the marketing results for two similar products for a two-year period. The results are extremely interesting.

To protect the identity of the manufacturers, these products are referred to as Brand A and Brand B. In all other respects, however, the conditions are actual.

Brands A and B are products identified primarily with weed control in corn, and distributed mainly in the East North Central United States. There were some remarkable changes concerning these products from 1958 to 1959.

Looking first at Brand A, the number of farmers using it in 1959 was only about *⅓ of the total users in 1958.*

In 1958, Brand A was promoted to a great extent by the use of free samples. This accounts for the much greater number of users in 1958 and since the number of users declined so much in 1959, it may appear on the surface that the program was unsuccessful. Other figures prove this conclusion to be erroneous, however. Dollar retail sales of this product increased 42% in the East North Central states in 1959! The 42% increase in sales was a strong improvement in 1959. The total acres of corn treated with this product is another important indicator. Acreage of corn treated in 1959 almost doubled the acreage treated in 1958.

WAS THE PROGRAM SUCCESSFUL?

Can it be said, then, that free sampling was a successful sales promotion program for Brand A? The answer may appear to be affirmative; however, there are other questions which must be answered. For example, what might have been the sales increase without the use of samples? Sampling is often an expensive form of promotion. Did the increase in sales offset the cost of the samples?

Answers to these questions may be obtained by studying two other sources of information—first, the general change in the herbicide market in 1959, and second, the sales picture of a similar product.

Looking at the general herbicide market in the East North Central U. S., it is found that there was

(Continued on page 55)

Four to GOOD SALES MEETINGS

By F. E. HARTZLER

Most people are fed up with sales meetings and sales training. Why? Probably because they have never set out to evaluate what they were trying to do and why they are trying to do it. Frequently it seems to be an utter waste of time, but just enough times it pays off so well that you know there is something to these meetings if only you knew what it is. Let's look at some of the hidden mechanisms that make a sales meeting good.

Good sales meetings don't just happen. They are thoroughly planned from start to finish. In on-the-job training one method is generally thought to be superior to all the others: the four step method. These are the four steps:

1) *Preparation.* In this stage you prepare the learner for what you are going to present. You may give the reasons for the training; how much good it will do him; and what he can do with the information. The amount of time used here should be as short as possible. Most sales meetings miss right here. This fifteen minutes at the beginning is used for every purpose but presentation—reviews of the state of the industry, a welcome by the president, almost anything but a clear presentation of what they are going to do and why they are doing it.

2) *Presentation.* The presentation stage is the time to tell them what you intended to tell them. To do so, choose whatever method seems to you to be most effective: lecture, lecture with slides or visual aids, or demonstration. This is the point where you *present* what you have to present. Once into the presentation you should move clearly and thoroughly —skip the jokes. Find the points and stay with them.

3) *Application.* This is the stage so often skipped by sales meetings, yet it is the most important step. In this stage the salesman uses the information himself. This gives you the chance to check whether he really understands and can use what you are presenting. Many large corporations with good sales training programs would not consider leaving out this stage. National Cash Register Company, for instance, insists that each trainee must make many sales demonstrations during the training program. These demonstrations are extremely valuable.

4) *Follow-up.* The follow-up stage is just what it says: following up on the job to see that the person who was trained can apply the information that he learned to the actual job situation.

Now let's summarize these steps: 1. Are you ready to learn? 2. This is what you are supposed to learn. 3. Did you learn it? 4. Can you really use it?

DETERMINE PROBLEMS, OBJECTIVES

With these four steps in mind let's try planning a sales meeting—yours. First of all, what is your objective for this meeting? Even more basic than this, what is your problem? Are you sure that this is the problem? How do you know? Do you hope to find a solution? Or clear the air?

Now this is a poor place to answer, "More sales," "More enthusiasm," or some other general nonsense. Be specific. What is the problem and how does this problem manifest itself in action on the job?

So your first step in setting the objectives for a sales meeting is to select ten or fifteen salesmen at random—not all good ones, not all bad ones—and travel with them for a day. If you can't do this, at least talk to them—find out what their problems are.

Having done this you should have a good problem which is of real interest to your salesmen: a good objective for the meeting. The objective will determine the method of presentation, application and follow-up.

If the objective you decided on was answering a price objection, you will use one method of presentation. If it is selling an entire fertilizer program, you will use another method. If, on the other hand, the objective of this meeting is the introduction of a new product, you would use another method. When they leave this meeting, you want them to be able to do something specifically.

Let us take one problem as an example: Let's say you want your salesmen to sell a fertilizer *program* rather than just fertilizer. In this case you want them to sell a program—this is your objective. To do this they must first of all know what a program is. Then they must know enough to make one up, and third, they must be reasonably certain that they can sell someone on this program.

Each of these tasks is somewhat different, and yet all are a part of your objective. To find out if they know what a program is, you could use the "Phillips 6–6 Method" to find out just how much they know and how much new information they need.

For the second part, to see if they know how to make out a fertilizer program, you might want to use the case problem approach. Be sure to have the basic principles in the case and the basic information needed to arrive at a solution.

To illustrate a case problem approach let's use the following case. Here is a farmer with two hundred and forty acres of land. He has the following skills: he is a good corn farmer, and a good cattle and hog feeder. (An equipment and building inventory should be provided.) What farm program would make him the most money? Let your people work in teams of two or three to work out a program. Then discuss the programs decided on.

For the final objective, training in selling the program, I would pair them off. Let one be the farmer and the other the salesman. Then reverse the order so that each man gets some practice in selling the program. Have them take notes on the difficulties that they run into.

Perhaps now you may want to review some of the fundamental differences between this sales meeting plan and the one you have been using. First of all, this would be a small group operation—not more than twenty-five. Second, the instructor would be doing very little of the work. This may not seem right, but it is still a good rule in education that the man who does the work learns the most. *You* won't learn much but your salesmen will learn a lot. Another big difference, most sales demonstrations, with one man in front of the group, do not do the group much good. In the method I have outlined no one has a chance to sit around and watch somebody else. Each has to get in there and practice himself. This last is far superior to just watching someone else. Practice is important in the learning of anything. You can't learn to play good football just by sitting in the stands watching Ohio and Notre Dame; the same is true in selling. To learn, you must practice.

The fourth step in this program would be to send out post cards about a month after the meeting with perhaps two or three questions such as, "What have you done in the last month that you did not do before?" "Give an example." This, along with sales records, would serve as your evaluation.

Now let us suppose that our sales meeting is a different matter. This time it is the introduction of a new line. First of all, what is your objective? What do you want them to know, or do, at the end of this meeting that they cannot do now? How will you accomplish this?

LET'S LOOK AT A PLANNING SHEET

Just to simplify our task, let's take a look at a sales meeting planning sheet.

Objective: Introduction of a New Product.
Source of the objective: Home office
Primary problem in training:
1) Give information (X)
2) Acquire Skill ( )
3) Learn to think in a new pattern ( )
4) Understanding ( )
Remarks: In this case we have two primary goals:
To give information about the new product.
To show how to translate this information into selling points.

Step 1. Preparation:	Lecture ( )
	Film strip ( )
	Demonstration ( )
	Booth ( )
	Live models ( )
	Discussion (X)
Step 2. Presentation:	Lecture ( )
	Lecture with visual aids (X)
	Movie ( )
	Film strip ( )
	Demonstration (X)
	Discussion Phillips "66" ( )
	Hand out material (X)
Step 3. Application:	Discussion ( )
	Practice group (X)
	Individual demonstration ( )
	Written or oral tests ( )
	Phillips "66" ( )
Step 4. Follow-up:	Supervisor's report ( )
	Class member's report ( )
	Visitation on the job (X)
	Sales data (X)

Now for this introducing of a new line: You should prepare your people with a short group discussion of why they need to know about the new product, and what they need to know about it. Here again the Phillips 6–6 method would be good. For this you might allow ten minutes.

For actually presenting the product you will need a lecture with visual aids, real models of the product to handle and show, and of course hand-out material on the product. This is step two. This should take forty-five minutes to an hour.

For step three, the application stage, you may want to use group demonstrations. In this technique, everyone should have his turn as a salesman *and* as a customer—not a one at a time proposition, but half of the group selling at a time.

For evaluation, the final check is, of course, how well did the sales go? As an added check you might want to make a field visitation and find out how well they were using the information you gave them at the meeting.

Now if the group is too large to use group practice and this could well happen, use a written test about the new product and give it to everyone present. This would do two things. It would tell whether or not the information was getting through, and also, for your knowledge, you could find out if the most important points stand out clearly as important.

Sales training can be very effective if you do these things: Know where you are trying to go. Determine the best way to get there. Get there, and then check to see if this is where you wanted to go. ▲

Solving AIR POLLUTION PROBLEMS in Fertilizer Production

By R. B. ENGDAHL and G. F. SACHSEL*

THE AIR polluting potential of most fertilizer plants can usually be characterized into three separate types of pollution: Coarse dust, fume, odorous or corrosive gases and vapors.

The practical method for abating one of these types may not be applicable to the others. But regardless of type, solution of the problem may lie partly in initial plant design, plant operation, plant maintenance, or in application of separate abatement equipment. Obviously the lowest cost for abatement in the long run is obtained when it can come by plant design. Next in economic attractiveness is abatement by alert control of plant operation and by maintenance. Preventive maintenance of all equipment is a readily evident characteristic of the efficient plant, and even though the abatement of pollution may not be a profit-making operation, the economic sense of preventive maintenance applies equally as decisively here as anywhere. When pollutants elude all of these efforts, then the selection of the proper abatement equipment and its correct installation, followed too by preventive maintenance, is the only answer.

The following are the important factors essential to adequate control of the various types of fertilizer pollutants.

Battelle Memorial Institute, Columbus, Ohio

SOURCES OF POLLUTANTS

Let us look at a fertilizer plant and see how many potential trouble spots there are. We will assume that the plant consists of a lead chamber sulfuric acid unit, a superphosphate unit and a mixed fertilizer unit. We will further ignore poor maintenance and housekeeping and stick to sources of pollutants inherent in the process.

Sulfuric Acid. A chamber plant unit is a source of sulfuric dioxide and nitrogen oxides in low concentrations. Both are gases. The first one is colorless and has an odor whereas the second one is odorless but has a brown color in concentrations of 500 parts per million or over. If the plant is operated properly the concentrations are low enough to make recovery or destruction somewhat of a problem.

Superphosphate. Two sources of pollutants exist here: rock dust from grinding and fluorine-bearing fumes and gases from acidulation.

If the air-swept mill and dust collector for rock grinding are properly designed, overgrinding is the most likely source of dust and can usually be traced to improper operation of the mill.

Acidulation fumes and gases cannot be avoided. All phosphate rock processed in the U. S. (and most of the rock elsewhere in the world) contains substantial

quantities of fluorine and silica. When the rock is reacted with an acid of sufficient strength to convert the phosphate into the water-soluble form, gaseous colorless silicon tetrafluoride and hydrofluoric acid are released. In the presence of moisture the silicon tetrafluoride can decompose to a white silica fume and more colorless hydrofluoric acid gas. The invisible gases are corrosive and may damage plant life. In a batch den things are aggravated by variable concentration of pollutants in the off gases, a high concentration existing during the acidulation period which drops off during the curing cycle. Continuous dens can also give trouble if acid concentration, acid ratio and mixing action do not promote substantially complete reaction in the den. Gases will then continue to be given off from the storage pile, at low concentration but over an extended period.

Mixed Fertilizer Operations. Dry blending is omitted from this discussion because dust emission from this type of operation is a matter of poor housekeeping. Both batch and continuous ammoniation can be sources of gases and fumes. The gases may be ammonia, nitrogen oxides, sulfur oxides, hydrochloric acid. If the superphosphate was made carelessly or is used green, silicon tetrafluoride and hydrofluoric acid may also be given off. Ammonium chloride fumes are often released. Most of these troubles show up with high nitrogen grades and are caused to a large extent by poor mixing. If no acid is used, ammonia and ammonium chloride are the major trouble makers. If acid is used to neutralize ammonia in excess of safe ammoniation rates, almost anything can happen, including fires.

When no granulation is practiced and only a cooler is used it is often a source of coarse dust, fine particles being entrained in the air stream. When a drier is used without granulation the amount of coarse dust may increase and fumes and gases may be released. The dust may increase because the combined effect of water removal and showering, and overheating, can cause particles to fall apart into smaller ones in the entrainment range. Overheating, by promoting decomposition, volatilization of ammonium chloride and a variety of chemical reactions, is the chief source of fumes and gases here. Proper design and operation of dryers can prevent much of the fume and gas trouble. Granulation is probably the best solution for the dust problem by reducing the amount of fines that can be entrained. As this also reduces caking, two birds are killed with one stone.

COARSE DUST

Generally, the main tonnage of pollutants emitted by fertilizer plants is in the form of coarse dust—10 microns and up. Ten microns, a little less than half of one thousandth of an inch, is called "coarse" because such particles settle relatively rapidly in still air and separate readily in simple centrifugal separating equipment. Cyclone separators can be expected to collect more than 90 per cent of such material if properly selected and if well maintained.

Too many cyclone collectors in the fertilizer industry are not performing up to their capabilities because of poor maintenance. Corrosion is the principal cause of these deficiencies, which can occur in two ways:

1) Holes in the collector walls leaking dusty air of the system is under pressure.
2) Inoperative sealing valves if the collector hopper is under suction.

In the latter case the role of the valve on the hopper bottom is to allow collected dust to flow out when the hopper is full but to prevent air being drawn in if the hopper is empty. When corrosion causes the valve pivot to seize and the valve stays shut, operation must stop when the hopper fills. Then, to maintain operations, the operator is prone to block the valve in the wide open position. Even a small amount of air leaking upward into a cyclone separator under suction largely destroys its separating action. Too few plant operating personnel are aware of the extreme importance of a tight seal under such conditions.

Closely related to the general corrosion problem is that of caking of dust on the inside of collectors. Where this occurs, periodic cleaning of the surfaces is essential. In some cases it can be minimized by control of temperature or humidity. An occasional vibration of the surfaces by enough well-placed vibrators may be an answer.

FUME

A much more difficult problem than that of coarse dust is the problem of fume, defined as liquid or solid particles under one micron. Between one and 10 microns the material is partially controllable by cyclone collectors or filters and can be completely collected by bag collectors. But the submicron material easily escapes most collection systems and the fact that it is usually not emitted in appreciable tonnages is small solace because of the peculiar light-scattering characteristics of particles in this size range. This property enables a small weight of material to obscure visibility over a considerable area. Hence to the casual observer, or to the neighbor affected, a plume comprised of a minute quantity of submicron material may appear to be a major emission, while if 100 times as much coarse dust being emitted happens to stay on plant property or to be diluted by other sources of coarse dust, it may go practically unnoticed.

Fume should obviously be minimized at the source rather than collected. If collection is necessary, high-intensity, water scrubbers or electrostatic precipitators are most effective. The era when tall stacks to disperse opaque plumes was acceptable is drawing to a close in many areas. Where local conditions favor the use of a tall stack, a full understanding of the topographic effects on plume dispersion is necessary before an appropriate stack height can be selected.

ODORS

Invisible gases and vapors from acidulation chambers or mixers are more amenable to innocuous dispersion via tall stacks. Where that is not feasible, high-intensity water scrubbers are the only effective alternative. Masking or counteracting odor agents may be shown to be effective in certain situations where emission conditions are readily controlled. ▲

TECHNICAL REVIEW

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Abstract of three of the many fine papers presented at the fourteenth annual meeting of the Northeastern Weed Control Conference appear below.

Delegates convened at the Hotel New Yorker, New York City, January 6, 7 and 8.

Effectiveness and Persistence in Soil of Certain Herbicides, Clayton M. Switzer and Wilfried E. Rauser, Dept. of Botany, Ontario Agricultural College, Guelph, Canada. The rate at which the phytotoxic properties of a herbicide disappear from treated soil has been investigated. It is apparent that environmental conditions such as temperature, rainfall, soil type and cultivation are involved. Both chemical and biological tests have been used to measure the residual activity of herbicides. A technique in which indicator plants were seeded into the treated area at various times after treatment was used in this test work.

Simazine and Atrazine have been shown to lose their toxicity at rates of 2 pounds active per acre within 8 weeks under conditions of relativel yhigh moisture and summer temperatures. Under dry conditions enough remained even after 12 months to bring about marked chlorosis in oats. The more soluble Atrazine appeared to disappear from the soil faster than Simazine at low rates, but at 5 or 6 lbs/A it was persistent. The other triazines could be rated in order of activity and persistence as follows: Methoxy Propazine, Propazine, Ipazine, Trietazine and Chlorazine.

Urox appeared to be the most persistent of all herbicides studied. A rate of 10 lbs/A suppressed all growth throughout two growing seasons. Monuron was similar to Simazine in its rate of disappearance with Diuron losing toxicity somewhat more quickly. Urab suppressed growth for 4 months after application.

Progress Report on Rate and Management Studies for Growth Suppression of Highway Turf with Maleic Hydrazide, E. F. Button, Conn. State Highway Dept. Success in attaining adequate growth suppression of highway turf in the past has been somewhat erratic with maleic hydrazide. In recent tests, rates of 4 to 7 lbs/A active ingredient in early June did not require mowing during the remainder of the growing season. . . . adjacent non-treated areas were mowed twice. Factors which may influence effectiveness are relative humidity during and after application, stage of vegetative growth and moisture conditions. Importance of thorough coverage and good wetting of turf is emphasized.

A greater suppression of growth was observed with fescues and bluegrass than was observed with orchardgrass. During the latter part of the growing season, clovers appeared to produce more growth in the treated areas probably due to the suppression of the grasses. Some other broad-leaved weeds were not suppressed by the treatment. To obtain "chemical mowing" it probably will be necessary to include a herbicide to control the broad-leaved weeds and weedy grasses.

The coordination of an effective herbicide program with the efficient and uniform application of maleic hydrazide is essential for an adequate and economical chemical mowing program.

Right-of-Way Spray Application by Automatic Spray Nozzle and Helicopter, R. A. Mann, Tennessee Valley Authority, Chattanooga, Tenn. The TVA power system included 11,728 miles of energized transmission lines at the end of the 1959 fiscal year, and it is estimated that this will increase to 11,933 miles during fiscal 1960. About 60 per cent of the rights-of-way run through wooded areas, resulting in approximately 80,000 acres of brush to be controlled.

Right-of-way brush control is the greatest and most expensive problem in the maintenance of transmission lines, in most instances. During the first 15 years of TVA operation, brush was cleared by large crews using hand tools. Labor costs constantly increased. Rotary brush cutters, bushwackers and power saws have also been used. Both hand and mechanical methods have the same disadvantage—roots are not killed and regrowth from stubble and stumps become more prolific after each clearing operation.

In 1949 TVA started using chemicals for right-of-way maintenance. During 1959, automatic spray nozzles mounted on army-type trucks and helicopters were used extensively. A skilled truck driver can cover a high percentage of the TVA transmission line rights-of-way with very few acres of brush skipped—less than 10 per cent.

The helicopter is especially adapted to difficult terrain, such as mountains and swamps. In these areas it can operate at a cost far below any other brush control method. The downward movement of air from the rotor causes the chemical to penetrate the growth to ground level and also aids in confining the chemical mixture to the right-of-way, helping to minimize damage to adjacent crops.

We do not claim that the automatic spray nozzle and the helicopter are the universal answers to the application of chemicals and they will not eliminate the use of ground crews for conventional foliage and basal treatment. However, they serve a real need in the right-of-way maintenance program. We have observed that the automatic spray nozzle gives a slightly higher percentage of root kill than the helicopter.

Through chemical treatment and new methods of application, 25 per cent more transmission line right-of-way was cleared last year. Expense was reduced more than 10 per cent at the same time.

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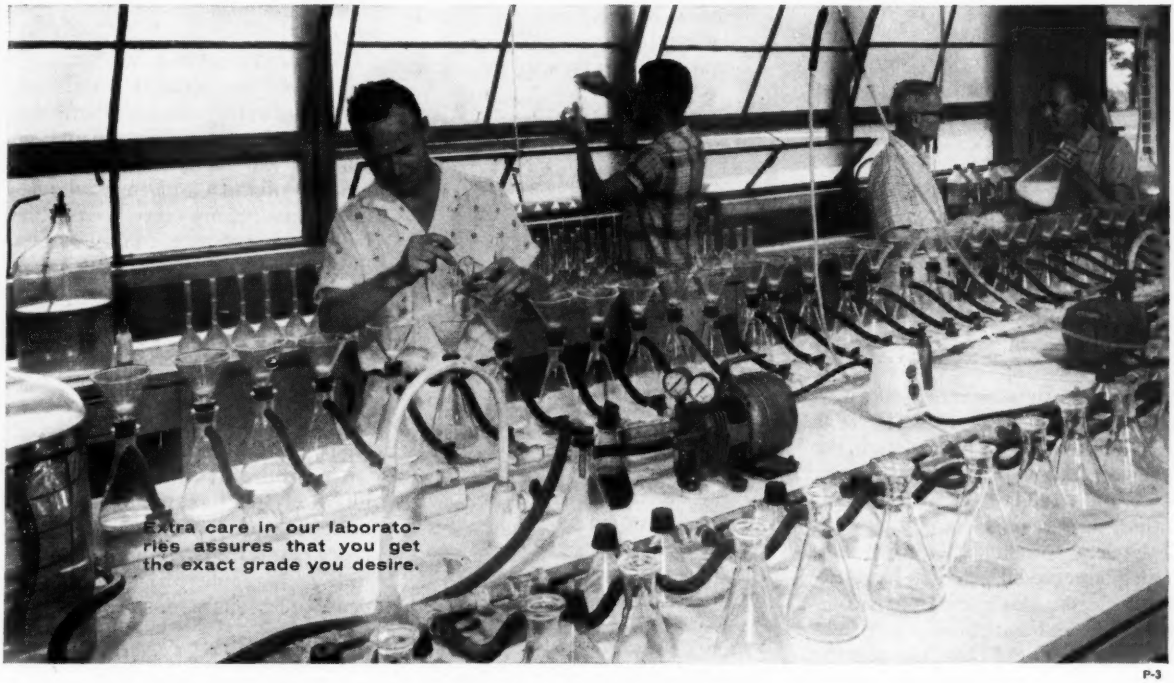

P-3

. . . And that *extra care* is just as real as the people who give it . . . people like your customers . . . people like your friends and neighbors—second and third generation people with the phosphate business literally bred into them working with Swift, the oldest phosphate operator in Florida.

Swift's extra care may very well offer you the opportunity to improve your customer satisfaction . . . your plant operations . . . and your profits. It's worth checking into! Have a Swift Phosphate Center Representative outline the advantages Swift offers you in phosphates—triple, rock or ground rock.

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To Serve Your Industry Better WITH PHOSPHATE ROCK,
GROUND PHOSPHATE ROCK AND MINUTE MAN TRIPLE SUPERPHOSPHATE

NEWS OF THE INDUSTRY

CYANAMID OF CANADA'S UREA PLANT GOES ON STREAM

A multi-million dollar urea plant which obtains its raw materials from a neighboring steel mill and is built on reclaimed land has been put on stream at Hamilton, Ontario by Cyanamid of Canada Ltd., a subsidiary of American Cyanamid Co.

This is Canada's first facility for production of urea, according to Dr. L. P. Moore, president of Cyanamid of Canada. The plant extracts all of its raw materials—hydrogen, nitrogen and carbon dioxide—from gases piped from the adjacent Dominion Foundries and Steel Co. mill.

The process not only supplies basic ingredients for urea production, but leaves the gases, which are shipped back to the steel mill, more efficient for use as a heating fuel, Cyanamid said.

Rated production capacity is 66,000 tons of urea per year. Anhydrous ammonia will be produced at the rate of 52,500 tons annually, with most of it being utilized in the production of urea and about 12,000 tons available for other purposes.

Urea is produced in some 240 miles of enclosed pipes and vessels, with every process automatically recorded and controlled.

According to Dr. Moore, the plant will serve a growing market for urea in both Canada and the United States.

"Its location places it directly on the Great Lakes and Atlantic shipping lanes and near major railroad centers of both Canada and the United States," he said. "In addition it is within a short distance of our Welland plant at Niagara Falls, a location at which we propose to make use of a good amount of the excess ammonia."

Construction, started in 1957, was carried out by Chemical Construction Co.

DOW'S CLEVELAND OFFICE OCCUPIES NEW QUARTERS

The Dow Chemical Co.'s Cleveland sales office has occupied new quarters on the 18th floor of the recently completed Illuminating Building, 55 Public Square. To expedite customer service, the entire work area is built around a communications center which relays customer orders to Dow manufacturing locations via the Dow private line teletype network.

SPENCER WINS READERSHIP AWARD

Spencer Chemical Co. reports that top readership for fertilizer advertising in farm papers has won a Readex Reader Interest Award for the company.

Bert Lund, advertising manager

of "The Farmer," is shown above presenting the award to Byron Kern, vice president, agricultural chemicals for Spencer. Others in the picture are Richard W. Dodderidge, Spencer account executive with Bruce B. Brewer and Co., and M. H. Straight, Spencer advertising director.

Basis of the award was Spencer's advertising performance in "The Farmer" over a 10-year period, 1950–1959. During this period, four out of the top five fertilizer ads in the magazine which were rated by Readex came from Spencer.

CENTRAL FARMERS MINING CEASES FOR THE WINTER

Mining operations at the Central Farmers fertilizer plant just east of Georgetown, Idaho, ceased for the winter months with fulfillment of a contract for over 650,000 tons of raw materials.

Termination of operations means that only a skeleton crew of 60 men will continue stripping operations on the phosphate deposits for next year's production, according to Robert Sacrison, superintendent of Wells Cargo Corp., in charge of materials production. Sacrison said his firm employed more than 160 men during peak operations.

NIAGARA CHEM. TO BUILD NEW PESTICIDE PLANT

Niagara Chemical Div. of Food Machinery and Chemical Corp. will set up facilities at South Haven, Mich. for production of a wide range of pesticides, reports Ralph C. Gaines, regional manager.

Expected to begin operations in March, the unit will be located in an existing building, part of which has been used for the past two years as a warehouse for Niagara products.

Niagara's regional headquarters will also be located at South Haven, serving the administrative function for Michigan, Ohio and parts of Kentucky and West Virginia. William Van Dragt, who has been supervising the warehouse, will also serve as manager of production. Gerald Morris has been named office and credit manager, and Joseph Klackle takes the post of regional technical service manager.

CSC DECLARES EXTRA CASH AND STOCK DIVIDEND

Commercial Solvents Corp.'s board of directors on November 23 declared an extra dividend of five cents per share of common stock as well as a regular dividend of five cents per share for the fourth quarter.

In addition, the board announced a two per cent stock dividend on its 2,741,422 issued shares of common stock. The dividends were paid Dec. 31, 1959 to stockholders of record at the close of business on Dec. 4.

Maynard C. Wheeler, Commercial Solvents president, said that the company's sales for the first nine months of the year were about $51,800,000, as compared with $46,700,000 for the same period in 1958. Earnings from Jan. 1 to Sept. 30 rose from 38 cents per share in 1958 to 83 cents per share in 1959.

NEW CORPORATION

Acme Fertilizer Co., Glasgow, Ky., ($1,000,000) will deal in fertilizers and allied products. Incorporators are L. Rogers Wells, Sr., Richard L. Garnett and L. Rogers Wells, Jr.

USE OF PLANT FOOD IN VIRGINIA INCREASES

Use of mixed fertilizer and materials measured in tons increased about 12 per cent in Virginia for July 1958 through June 1959 over the same months the year before, according to W. W. Lewis, extension agronomist at Virginia Polytechnic Institute. Tonnage in 1958–59 was 779,143, compared to 690,556 for 1957–58.

The big increase in tonnage seems to be in the analyses with 0-1-2, 1-3-6, 1-2-2 and 1-1-1 ratios. Such analyses as 0-10-20, 3-8-18, 5-10-10, 10-20-20 and 10-10-10 have shown considerable increase. At present 5-10-10 is reported to be the most popular analysis with about 25 per cent of the tonnage in this grade.

DAVISON AWARDS CONTRACT FOR SULFURIC ACID PLANT

Contract for engineering and construction of a Monsanto contact sulfuric acid plant at Bartow, Fla., for Davison Chemical Div., W. R. Grace & Co., has been awarded Leonard Construction Co. of Chicago.

The plant, which will have an initial rated production capacity of 400 tons per day with built-in facilities for additional expansion, will use elemental sulfur as a raw material. The acid will be used to supplement Davison's present production of fertilizer materials.

Construction will begin immediately, Leonard said, with completion scheduled for August, 1960.

GOVT. CONTRACT AWARDS

Baird and McGuire, Inc., Holbrook, Mass., has been awarded a $10,526.25 prime contract to supply chlordane insecticide to the U. S. Navy Purchasing Office, Brooklyn, New York.

McQUETER CHEMICAL BUILDS NEW FERTILIZER PLANT

Construction of a $200,000 building to house the McQueter Chemical Co. fertilizer plant has been started by Longhorn Construction Co. of Sulphur Springs, Tex. on a five acre tract one mile east of Mount Vernon, Mo.

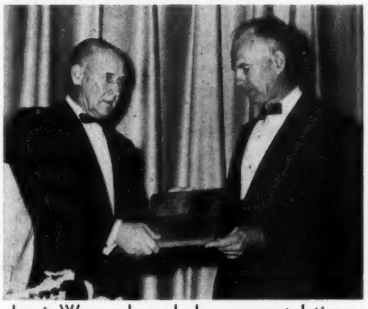
The plant will contain about 21,000 square feet of floor space and will be capable of producing 25,000 tons of granular fertilizer per year. Completion is scheduled for March 1, 1960.

NEW AID-TO-EDUCATION PROGRAM AT HOOKER

Hooker Charitable Foundation, Inc., recently formed by Hooker Chemical Corp., has established a "Corporate Alumnus Program" to encourage financial support by its employees of universities, colleges, their graduate schools and accredited two-year junior colleges and technical institutes.

The program provides essentially that the Foundation will contribute an amount up to $500 per employee in any fiscal year, equal to the sums given by an employee of Hooker Chemical or its subsidiaries to or for the benefit of a qualifying institution of higher education.

IMC SCHOLARSHIPS HONOR LOUIS WARE



Louis Ware acknowledges congratulations from Dr. R. A. Jordan, dean, graduate school, Colorado School of Mines, for establishment of new IMC scholarships.

Establishment of a unique program of scholarship and fellowship awards in agriculture and mining was announced by International Minerals & Chemical Corp. at a dinner Dec. 10 honoring Louis Ware, IMC board chairman, on his 20th anniversary with the company.

Called the "Louis Ware Scholarships for Outstanding Achievement in Agricultural and Mining Sciences," the program provides for twelve $1,000 senior year scholarships to students interested in pursuing graduate studies in the areas of mining and agriculture. The six students in each area would then compete, during their senior year, for a $3,000 annual fellowship leading to a doctorate degree.

TEXAS GULF ISSUES SULPHUR MANUAL

Texas Gulf Sulphur Co., Inc., has just issued a comprehensive, detailed *Sulphur Manual*, reported to be interesting and beneficial to companies now using or planning to use sulphur, solid or molten.

It is divided into four sections, followed by an Appendix, with the following contents:

Section I: "The Sulphur Industry." An up-to-date, comprehensive discussion of the sulphur industry on a world-wide basis.

Section II: "Shipping of Molten Sulphur." The company details its own experiences with molten sulphur and recommends certain procedures.

Section III: Handling and Storage of Molten Sulphur." Detailed instructions on how to take care of shipments when they come in and how to set up both central and subsidiary storage facilities.

Section IV: "Analysis of Sulphur." Latest analytical methods for checking purity, best methods of sampling and most satisfactory analytical apparatus to use.

Appendix A: "Physio-Chemical Properties of Sulphur." A review of all the properties of sulphur, with latest proved determinations.

On request, the company will send the Manual and/or individual sections. Write Texas Gulf Sulphur Co., Inc., 75 East 45th St., New York 17, N. Y., Attention Sales Dept.

ROHM & HAAS EXHIBITS AT NEW DELHI WORLD FAIR

Rohm & Haas Co. was one of 46 private firms invited to exhibit in the First World Agricultural Fair, held at New Delhi, India, from Dec. 11, 1959 to Feb. 14, 1960.

The U. S. Departments of Agriculture and Commerce, the Atomic Energy Commission, U. S. Information Agency and private firms have coordinated their efforts to portray American agricultural productivity.

Included in the Rohm & Haas exhibit are a number of the company's fungicides and insecticides which have world-wide use.

The New Delhi Fair is the first agricultural exhibit of this type ever attempted.

HERCULES TO EXPAND WEST COAST FACILITIES

Plans for a multimillion dollar expansion of its West Coast facilities at Hercules, Calif., have been announced by Hercules Powder Co. Included is construction of new manufacturing facilities for production of methanol, formaldehyde, urea-formaldehyde concentrates and slow nitrogen release urea-form for fertilizer applications.

John M. Martin, general manager of Hercules Explosives Dept., said that construction of the new facilities for producing urea-formaldehyde compositions would be completed by mid 1960, with methanol-formaldehyde facilities completed in early 1961.

The construction will provide facilities for production of 8,000,000 gallons of methanol per year, 50 million pounds of formaldehyde and 11,000 tons of urea-formaldehyde compositions.

CYANAMID LAUNCHES CAMPAIGN TO PROMOTE USE OF UREA N

An intensive campaign to promote the use of urea nitrogen in grassland farming is being launched this month by American Cyanamid Co., makers of Aero Urea. The kick-off is a two-page spread and eight-page detachable insert in Farm Journal's Eastern Edition, plus the states of Ohio and Michigan.

The four-color insert describes how Cyanamid conducted a two-year demonstration among a group of dairy farmers, under the supervision of agricultural college specialists. The tests show how farmers can increase milk-making capacity of their grasslands by as much as 40 per cent by using urea nitrogen and good management practices.

AGRICO'S JOHNSON CREEK PLANT OPEN FOR BUSINESS

Fertilizer is now moving from Agrico's newest plant at Johnson Creek Wis., reports J. W. Engle, regional manager for The American Agricultural Chemical Co. The plant is located at the junction of state highways 26 and 30, midway between Madison and Milwaukee. It includes facilities to store and handle the company's complete line of farm fertilizers and turf and garden plant foods.

SMITH-DOUGLASS FIRST QUARTER SALES, INCOME UP

Net income of $645,922 for the first quarter of the current year, compared to $373,972 for the same period last year, and net sales of $9,509,426 compared to $7,331,385 last year, have been reported by Smith-Douglass Co.

Earnings per common share rose to 63 cents, compared to 35 cents for the same period last year.

PC&C EXPANDS NEVILLE I. SULFURIC ACID PLANT

Pittsburgh Coke & Chemical Co. is expanding its Neville Island sulfuric acid plant capacity by 70 per cent, according to W. K. Menke, vice president—Chemical Divs.

STAUFFER TO DOUBLE CALIF. FARM CHEMICAL UNIT

Stauffer Chemical Co. has begun construction of a new plant at Richmond, Calif., which will double the firm's capacity to produce farm chemicals for the northern California market. It is scheduled to be in operation in February and will replace the company's present Berkeley unit.

The new unit is located at Richmond so that it can be integrated with Stauffer's major Richmond plant which produces sulfuric acid, superphosphate and mixed fertilizers.

Stauffer has acquired General Foam Products, of Los Angeles, Manufacturers of a range of expanded polystyrene, the firm will be operated as a unit of Stauffer's Molded Products Div.

Calendar

Jan. 5-6. Texas Fertilizer Conference, College Station.
Jan. 6-8. Fourteenth Annual Northeastern Weed Control Conference, Hotel New Yorker, New York City.
Jan. 7-8. Colorado Fertilizer Conference, Ft. Collins.
Jan. 7-8. Sixth annual Mississippi Insect Control Conference, Mississippi State University, Alumni-Student Building, State College, Miss.
Jan. 12-13. Nebraska Fertilizer Institute Annual Convention, Pershing Auditorium, Lincoln, Neb. Sponsored by Institute and Univ. of Nebraska.
Jan. 13. Third Annual New Mexico Agricultural Chemical Conference, New Mexico State University, University Park.
Jan. 13-14. Pesticide School, North Carolina State College, Raleigh.
Jan. 13-15. Agricultural Ammonia Institute Ninth Annual Convention, Statler Hilton Hotel, Dallas, Tex.
Jan. 14-15. National Cotton Council Beltwide Production-Mechanization Conference, Peabody Hotel, Memphis, Tenn.
Jan. 14-16. Agricultural Aircraft Association Tenth Annual Convention, El Mirador Hotel, Palm Springs, Calif.
Jan. 20-21. Third Annual Arizona Fertilizer Conference, University of Arizona Campus, Tucson.
Jan. 20-21. Northwest Agricultural Chemicals Industry Conference, Benson Hotel, Portland, Ore.
Jan. 20-22. Thirteenth Annual Southern Weed Conference, Vista Hotel, Biloxi, Miss.
Jan. 25. Annual Lime and Fertilizer Day, University of Wis., Madison.
Jan. 25-26. Pesticide Conference, Memorial Center, Purdue University, Lafayette, Ind.
Jan. 25-28. Plant Maintenance & Engineering Show and Conference, Convention Hall, Phila., Penna.
Jan. 26-27. South Dakota Fertilizer Dealers Program, South Dakota State College, College Station, S. D.
Jan. 27-28. Illinois Custom Spray Operators' School, Urbana.
Jan. 27-29. The Tennessee Valley Authority and The Southern Regional Soil Research Committee Symposium on the Chemistry of Phosphate-Soil Reactions, Muscle Shoals, Ala.
Jan. 28-29. Annual meeting of the Colorado Agricultural Chemicals Association, Cosmopolitan Hotel, Denver, Colo.
Feb. 8-9. Meeting of the Southwestern Branch, Entomological Society of America, Hilton Hotel, El Paso, Tex.
Feb. 9-11. Seventh Annual Agricultural Chemicals Conference, Texas Technological College, Lubbock.
Feb. 11-12. Midwest Agronomists-Fertilizer Industry Meeting, sponsored by NPFI, Edgewater Beach Hotel, Chicago.
Feb. 17-18. Alabama Pest Control Conference, sponsored by Ala. Assn. for Control of Economic Pests and the A.P.I. Agricultural Experiment Station, A.P.I. Campus, Auburn.
Feb. 22-25. Weed Society of America and Western Weed Control Conference, Cosmopolitan Hotel, Denver, Colo.
March 22-23. Western Agricultural Chemicals Assn. Spring Meeting, Miramar Hotel, Santa Barbara, Calif.

Associations Meetings

WEED SOCIETY OF AMERICA MEETING PROGRAM ANNOUNCED

Leading authorities from three nations will address members of the Weed Society of America during a general session at their third biennial meeting, to be held Feb. 22–25 at the Cosmopolitan Hotel, Denver, Colo. Dr. W. C. Shaw, WSA secretary and program chairman, Crops Research Div., Agricultural Research Service, USDA, Beltsville, released the meeting program.

"Weed Control Research—Past, Present, Future" will be the title of an address by WSA president, Dr. A. S. Crafts, Botany Dept., University of Calif., Davis, to be given at the opening of the general session Tuesday morning, Feb. 23.

Other speakers who will address society members at the general session include Dr. E. K. Woodford, Dept. of Agriculture, Oxford, England, who will speak on "Weed Control Research in England"; Dr. Hans Gysin, director of research, Geigy Chemical Corp., Basle, Switzerland, whose paper will be titled "The Role of Chemical Research in Developing Selective Chemical Weed Control Practices"; and Dr. M. W. Parker, director, Crops Research Div., Agricultural Research Service, USDA, Beltsville, who will discuss "Organizational Needs in the Field of Weed Control.

In addition to the general session, 14 sectional meetings are scheduled. Hosts to the meeting will be the Western Weed Control Conference. It is reported that more than 500 scientists and others interested in weed control will attend the four-day meeting.

PRODUCTION-MECHANIZATION CONFERENCE: JAN. 14-15

"Growing Quality Cotton Efficiently" is the theme for the National Cotton Council's Beltwide Production-Mechanization Conference at the Peabody Hotel in Memphis, Jan. 14–15. Five technical groups—pathologists, physiologists, entomologists, engineers and geneticists and breeders—meeting in conjunction with the conference —will hold sessions Jan. 11–13.

Among the topics to be discussed are Use of Fertilizer to Cut Cotton Production Costs, Promising Chemical Approaches to Cotton Fruiting Control, Implications of What We Know About Insect Resistance to Insecticides, Plans for Comprehensive Research Program on the Boll Weevil, and New Developments in Application of Pesticides.

A panel is scheduled to discuss Cotton Pest Control and Harvest Aid Guides for 1960, including Diseases, Weeds, Insects, Defoliation and Application Equipment.

CAMPAIGN DOUBLES SOIL SAMPLES IN ALABAMA

As a result of the Intensified Soil Fertility Campaign in Alabama during 1959, 18,942 soil samples were processed at the Agricultural Experiment Soil Testing Laboratory. This was twice as many samples as were processed in 1958, according to Dr. R. D. Rouse, head of the laboratory.

Degree of the stepped-up soil fertility educational and publicity efforts during the period of Jan. 1–June 15 is described by these figures furnished by J. C. Lowery, Auburn University Extension Agronomist and his co-workers: There were 36 leader meetings with 500 attending; 20 "kick-off" meetings attended by 1,136 community business and farm leaders; 15 special editions of county newspapers; 1,162 soil fertility articles in local papers; 299 ads by local firms promoting soil testing and improved soil fertility; 59 county agents used rubber stamp slogan "Have You Had Your Soil Tested?"; 327 radio programs and 234 exhibits on soil fertility and soil testing and 150 circular letters with 95,859 copies.

During 1960, twelve additional counties are joining the campaign, which is under the direction of Lowery. He is being assisted by the Alabama Soil Fertility Society, American Potash Institute and National Plant Food Institute.

Thirteen counties are in the Texas state-administered Intensified Soil Fertility Program, which is supported by the Texas Plant Food Educational Society and NPFI.

PNPFA OFFICERS NAMED

At the Pacific Northwest Plant Food Association's annual meeting in Yakima, Wash., October 15–16, Karl Baur, Pacific Cooperatives, was elected president. Serving with him are Harold Rud, J. R. Simplot Co., vice-president; Henning Waltersdorph, Magnolia Fertilizer Co., treasurer; and Leon S. Jackson, secretary.

Named directors for a two-year term were Dick South, Hansen & Peterson; Keith Hanson, Collier Carbon & Chemical Co.; Arthur Burkette, The Chas. H. Lilly Co.; Ben McCollum, J. R. Simplot Co.; and Trevor Steele, American Potash & Chemical Corp.

Actual registration at Yakima totaled 229, Jackson reported, with 160 attending the annual banquet.

AAFCO ISSUES OFFICIAL PUBLICATION NO. 13

Official Publication No. 13 of the Association of American Fertilizer Control Officials now is available at $2 per copy. The publication carries talks presented at the annual meeting in Washington, D. C., in October 1959, as well as reports by investigators, the 14th draft of the Model Fertilizer Bill, definition of fertilizer terms, names, addresses and telephone numbers of all fertilizer control officials in the United States and other helpful information. Checks or money orders should be sent directly to the Secretary-Treasurer, B. D. Cloaninger, P. O. Drawer 392, Clemson, S. C.

"COMMUNICATION FOR SAFETY"

Release of a series of four training films titled "Communication for Safety," has been announced by the National Safety Council.

The films use "everyday supervisor-worker situations, plus an effective combination of live-action photography and clever animation to achieve maximum believability."

Available either individually or in series of four, the films come in two sizes—16mm sound motion picture and 35mm sound color film. Further information may be obtained from the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

CFA ELECTS GALBRAITH ITS PRESIDENT FOR 1960

Demont W. Galbraith was elected president of the California Fertilizer Association for 1960 during the association's annual convention at the Fairmont Hotel, San Francisco, November 8–11. Galbraith is president of Agriform of Northern California. Other officers named for 1960 were James F. Sloan, J. F. Sloan Co., vice president; Lawrence M. Roberts, Shell Chemical Corp., secretary; John N. Williams, General Fertilizer & Supply Co., Chula Vista, treasurer; and Sidney H. Bierly was re-elected general manager.

Six directors were elected: John Parker, Fresno Agricultural Chemical Co., for a one-year term; L. M. Roberts for a two-year term; and the following for three year terms: William M. Clines, American Potash and Chemical Corp.; Sam Mooschekian, Downey Fertilizer Co.; J. F. Sloan; and John Taylor, John Taylor Fertilizers.

About 500 people from the United States and Canada attended the 36th annual convention of the association. Business session highlights were an address by Joseph E. Burger, director of public relations, H. V. Nootbaar Co.; a new film presented by Dr. Russell Coleman, executive vice president, National Plant Food Institute; a report by chairman M. E. McCollam of the CFA Soil Improvement Committee; and a panel discussion on "Technical Progress and Business Stability."

Title of the new motion picture exhibited by Dr. Coleman and produced by NPFI is "Bread from Stone." It pointed out that countries which employ adequate amounts of chemical fertilizers in their crop production practices enjoy the highest standards of living in the world. The film shows the origin of some principal fertilizer materials from ore or "stone", its processing and formulation into fertilizers, application to crop lands, the grain harvest and baking of bread.

CALIF. FARMER RELIES ON INDUSTRY FOR FERT. FACTS

"The California farmer relies heavily on the advice and assistance of well-established fertilizer concerns to help determine his fertilizer needs and methods of usage, according to a study published by the University of California." This statement was made recently by Dr. Richard B. Bahme, western regional director of the National Plant Food Institute, which sponsored the study.

Farmers interviewed indicated that fertilizer company representatives were their main source of information in determining their fertilizer practices. Almost three-fifths listed fertilizer fieldmen as their primary source of information. Farm advisors were sources for two-fifths of the farmers. The report covers a survey of farmers and a total of 81 agency representatives serving farmers in two California counties. Object of the study was to determine who helps the farmer most in his use of fertilizers.

Shown above, left to right, are Douglas Kleist and Luverne Donker, research workers; Dr. Orville Thompson, directing the study, University of California, Davis; and Dr. Richard B. Bahme.

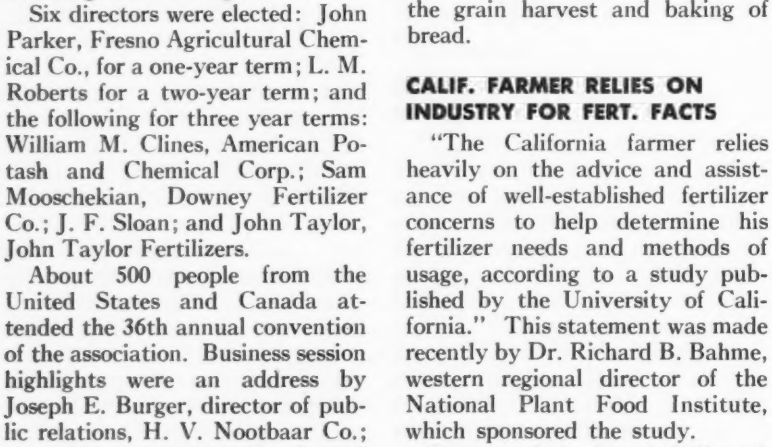
"According to fertilizer company representatives interviewed," Dr. Bahme said, "almost all (90 per cent) of the farmers purchasing fertilizers ask for information on kind and amount to use, proper placement and proper time of application. These company representatives further reported that three-fifths of the farmers follow the recommendations they give them."

NEW NEBRASKA INSTITUTE

At a recent meeting, the Nebraska Agricultural Chemical Institute was formed "to procure and disseminate useful knowledge and information pertaining to the scientific development of agriculture and to promote better understanding, cooperation and a high standard of ethics among all persons interested in agricultural chemical distribution."

Howard Peterson, Lincoln Service & Supply, Inc. has been elected president of the new group. Farrell Higbee, Brown Farm Chemical Co., was elected vice president, and William L. Munroe, Farm & Home Services, Inc. was elected secretary.

Also elected to the board was Ted Doyle, National Fertilizer Co., Max Mason, Thompson-Hayward Chemical Co., and Arlen Anderson, Crystal Chemical Co., Inc.



1960 CFA board of directors: Seated (left to right) are Lawrence M. Roberts of Shell Chemical Corp., secretary; Fred R. Bryant, Brown & Bryant; William M. Clines, American Potash & Chemical Corp.; Les R. Hamilton, California Spray-Chemical Corp.; and James Sloan of J. F. Sloan Co., vice president. Standing: Sam Mooschekian, Downey Fertilizer Co.; John N. Williams of General Fertilizer & Supply Co., treasurer; Demont W. Galbraith of Agriform of Northern California Inc., president; Howard H. Hawkins of Golden State Plant Food Co., retiring president; John Taylor, John Taylor Fertilizers; and Sidney H. Bierly, CFA general manager.

PROGRAM SET FOR MISS. INSECT CONTROL CONFERENCE

New insecticides, new insects, new methods of control will all be discussed at the sixth annual Mississippi Insect Control Conference Jan. 7–8 at Mississippi State University, State College.

Latest research information on controlling cereal and forage insects will be given by a panel of USDA entomologists at MSU.

Research on livestock pests; progress reports of the Southern Region Plant Pest Control Group; forest and cotton insects and latest research on cotton insect control will be covered.

Special emphasis will be placed on discussions of control of insects affecting man, including roaches, mosquitoes, sand flies and houseflies.

Aims and objectives of the new boll weevil research laboratory will be discussed by Dr. E. F. Knipling, director of entomology research, Agricultural Research Service, USDA.

Also included during the conference will be the announcement of Mississippi Cotton Insect Control Recommendations for 1960.

Annual meeting of the Mississippi Entomological Association will also be held during the conference.

AG AIRCRAFT ASSN. REPORTS CONVENTION PROGRAM

The El Mirador Hotel, Palm Springs, will be site of the 10th annual convention of the Agricultural Aircraft Association, Inc., January 14, 15 and 16.

On the afternoon of the 14th, there will be an airshow-type demonstration of aircraft and equipment at the airport.

An open meeting on the 15th features a panel of experts on all problems of the industry—"no holds barred". Luncheon speaker is R. V. Reynolds, Division Chief, FAA—Safety Committee.

The afternoon meeting includes presentations by Claude Finnell, Imperial County Agricultural Commissioner; Lloyd Nolan ag operator; Dr. Fogelman; and Robert Rollins, chief of the California Bureau of Chemistry.

There will be a closed association business meeting the morning of January 16, when officers and directors will be elected. John Neace will speak at the luncheon.

Among recreational features are a "Bavarian Beer Festival" January 13, a golf tournament, cocktail party, buffet dinner and dancing on the 14th, fashion show for ladies, cocktail party, annual banquet on the 15th, and a tour for the ladies on the 16th.

People

American Potash Institute. Dr. Roger P. Humbert, head of the Department of Agronomy of the Hawaiin Sugar Planters Assn. at Honolulu, joined API on Jan. 1 as director of its Western Region. Before heading the agronomy work of Hawaii's sugar planters, Dr. Humbert was head of the Agricultural Div. of Saratoga Laboratories, in Saratoga Springs, N. Y.,

Humbert

McCollam

and earlier head of the Soil Genesis Section of USDA's Plant Industry Station at Beltsville, Md.

He succeeds M. E. McCollam, who retired the last of December after 31 years of service to the potash industry, 24 years of it with the Institute.

Armour Agricultural Chemical Co. W. J. Foster has been appointed manager of the Columbia, S. C. Div. of Armour Agricultural Chemical. Foster replaces Paul J. Ziegler, who is retiring after 34 years of service as salesman and manager of the Armour Columbia Div. Also announced was transfer of A. W. Chandler from manager of the Armour San Juan, Puerto Rico Div. to sales manager of the Greensboro, N. C. Div. He will be succeeded in San Juan by Charles M. Brooks.

Foster

Ziegler

Chandler

Brooks

Bradley and Baker. Formerly St. Louis area sales manager, Thomas J. White becomes fertilizer sales manager, with headquarters in the New York office. Robert L. Borg succeeds White at St. Louis; Gerald E. Forbes, working out of Kansas City, covers Colorado, Kansas, Missouri, Nebraska and southern Iowa; Robert L. Harper, formerly with Mississippi River Chemical Co., calls on manufacturers in Michigan, Ohio and eastern Kentucky, and lives in Columbus, O.; William L. Guithues has located in Minneapolis, to

White

Borg

Forbes

Harper

serve North and South Dakota, Minnesota, Wisconsin and northern Iowa and Arthur G. Riddell, Jr. is covering Indiana, Illinois and Western Kentucky from West Lafayette, Ind.

The Bunker Hill Co. Prior to appointment of a new president, Emmett G. Solomon, vice president and director, will function as interim chief executive officer. John D. Bradley, Bunker Hill president, and his wife were killed Thanksgiving night on a San Francisco freeway when their southbound auto was struck head on by a northbound car which somersaulted out of control across the dividing strip.

Canadian Industries Limited, Agricultural Chemicals Div., appointments: K. A. Shantz to production manager, succeeding L. V. Clegg who has become general purchasing agent; H. G. Sewell to division sales manager—fertilizer; F. P. Smith replaces Sewell as Toronto district sales manager; G. R. Blais becomes Chatham, Ont. district sales manager replacing G. B. Ough, who has resigned.

Shantz

Chapman Chemical Co. Robert C. Harnden has been named to the newly created post of executive vice president. He had been vice president in charge of the company's Agricultural Chemicals Div. since 1950.

Chemical Specialties Manufacturers Assn. Herbert W. Hamilton, for many years secretary of CSMA, has received the association's 1959 Achievement Award presented annually for "outstanding contributions in the field of chemical specialties." Presentation was made at the group's recent meeting in Washington, D. C.

Hamilton

Columbia-Southern Chemical Corp. has appointed Dr. Richard L. Sawyer of Cornell University as a consultant for the firm's program on development and application of Chloro IPC for sprout inhibition of potatoes. Dr. Sawyer has taken a six-month leave of absence from Cornell, effected Dec. 1.

Sawyer

Diamond Alkali Co. Promotion of Martin F. Wilkerson, branch manager of the Southwest district sales office, to sales manager, Chlorinated Products Div., has been announced. Wilkerson has 11 years sales experience with Diamond since starting in 1948 as a field salesman in Memphis, Tenn.

Dow Chemical Co. Macauley Whiting, general manager of the Midland Div. was elected a member of the Dow board of directors at a board meeting Dec. 1.

Food Machinery and Chemical Corp. Duane H. Eckdahl has joined the Organic Chemicals Dept. as administrative assistant to A. T. Loeffler, dept. manager and FMC vice president. He had been a market analyst with Shell Chemical Corp.

Frontier Chemical Co., Div. of Vulcan Materials Co. Melvin E. Clark, vice president—marketing, has announced a number of promotions within his department: Jerry C. Walker becomes sales manager-chemicals; John B. Childress, assistant sales manager chemicals; Richard H. Barton, product manager-chemicals; Howard A. Stedman, sales manager-grain fumigants; E. A. Guldaman, traffic coordinator.

Geigy Agricultural Chemicals, Div. of Geigy Chemical Corp. New members of the sales staff are Robert E. Holland, M. A. Priola and Donald M. Mohr.

Holland, who will represent Geigy in South Florida, received a Master of Agriculture degree from the University of Florida early this year. He has performed laboratory work on citrus fruit insects and on pesticide residues at the Citrus Experiment Station, Lake Alfred, Fla.

Holland

Priola

Mohr

Priola, who will represent the company in Nebraska, was awarded a Master of Science degree from Colorado State University and was a technical sales representative with Shell Chemical Corp. before joining Geigy.

Mohr, who in 1951 was awarded a Bachelor of Science degree in Agriculture, had been employed by Olin Mathieson Chemical Corp. as New Jersey sales representative.

Hercules Powder Co. W. Coleman Edgar, sales manager of the Agricultural Chemicals Div., becomes manager of the Naval Stores Dept.'s San Francisco district. James H. Neal, manager of the San Francisco district since 1952, becomes sales manager of the Naval Stores Dept.'s Agricultural Chemical Div. Henry F. Pierce has been named assistant sales manager of the division.

Hooker Chemical Corp. Thomas E. Moffitt, president, has announced realigned and expanded executive duties for three corporate vice presidents. Thomas F. Willers is responsible for the Eastern Chemical, Phosphorus and Durez

Plastics Divisions, as well as for corporate engineering. F. Leonard Bryant for corporate research, marketing and general development; and John S. Coey succeeds Willers as general manager of the Eastern Chemical Div.

Robert E. Noble succeeds Bryant as general manager, Phosphorus Div. and Charles Y. Cain replaces Coey as sales manager, Eastern Chemical Div.

International Minerals and Chemical Corp. R. J. DeLargey has been named vice president, administration, a new position. He goes to IMC from Food Machinery and Chemical Corp., where he was general manager of the Westvaco Chlor-Alkali Div. DeLargey will be directly responsible for the company's industrial relations, purchasing, legal and industrial engineering departments.

DeLargey

In the Plant Food Div., James E. Sovocool has been promoted to district sales manager at Woburn, Mass.; F. R. Witham to northeast sales manager for specialty products; G. James Leonhardt to district sales manager at Cincinnati; John L. Medbery to superintendent of the Lockland (suburban Cincinnati) fertilizer and sulfuric acid plants; Robert L. Wright, area credit manager for the Greeneville and Lockland sales districts; and William J. Boston, to assistant superintendent, Lockland.

Ortho Agricultural Chemicals Limited. Appointment of Leroy C. Kennedy as vice president and director of Ortho Ag, Canadian subsidiary of California Spray-Chemical Corp., has been announced by A. W. Mohr, president.

Rutgers University. Dr. Clyde C. Hamilton, 69, research specialist in entomology, died of a heart attack at his home in Old Bridge on Dec. 6.

Smith-Douglass Co., Inc. C. E. Austin has been named sales training director for the Midwest sales area, reports M. W. Mawhinney, manager of the Streator, Ill., plant. Since joining S-D in 1953 he has supervised Iowa and Illinois sales territories.

Austin

Smith-Douglass has named R.D. Tayloe assistant to the fertilizer division production manager. Tayloe has 19 years experience related to fertilizer production and most recently was with Freeport Sulphur Co.

Sulphur Export Corp. Election of Peter A. Dimitri and Ernest A. Graupner as vice presidents has been announced by B. C. Hughes, chairman. The firm handles all marketing outside of North America and Cuba on behalf of all domestic producers of Frasch sulfur.

Thompson Chemicals Corp. Appointment of Douglass Henderson as vice president, operations and systems, has been announced. Henderson had been with the Univac division of Remington-Rand for ten years and more recently acted as a management consultant for systems and automation in office operation and procedures.

Henderson

Union Carbide Chemicals Co., Div. of Union Carbide Corp. T. P. Finn has been promoted to eastern regional sales manager, Crag Agricultural Chemicals, and Francis A. Pastor to product manager, Crag Glyodin. From his Rockford, Mich., headquarters, Finn will supervise field service and sales activities for the Crag pesticide line throughout the Northeastern, Middle Atlantic and Midwestern states. Pastor, with headquarters in New York City, will be responsible for marketing and distribution of Glyodin fungicide.

Finn

Pastor

U. S. Industrial Chemicals Co., Div. of National Distillers and Chemical Corp. Albert C. Brooks has been named manager of the Baltimore Sales Div. and Roy A. Parker, manager of the Kansas City Sales Div.

Chemicals

SOLUBLE PHOSPHATES BEST IN BANDS

Research at the Michigan Agricultural Experiment Station shows that phosphate fertilizers which are more than 40 per cent water soluble help plants more if they are placed in a band along the plant row.

The more insoluble phosphate carriers, however, are said to do a better job when broadcast and mixed with the soil.

Where soluble forms of phosphate fertilizers are broadcast, the Michigan scientists say, the plant food is tied up by reactions with soil minerals before the plants have a chance to use it. Therefore, a bigger application of the more soluble forms is needed to get the same results.

NEW PESTICIDE RESEARCH APPROACHES NEEDED, COMMITTEE REPORTS

The Agricultural Research Policy Committee for USDA at its recent annual meeting urged additional immediate expansion in the program of research, especially with respect to pesticides.

Much of the committee's discussion during a two-day meeting with USDA officials centered around problems associated with

both the adequacyand integrity of the nation's food supply. It was reported that discussions indicated problems ranging from fertilizers applied in granular, liquid and spray form through a long list of pesticides, plant growth regulators, hormones, antibiotics, feed additives, pharmaceuticals and other compounds used to protect and produce crops and livestock.

The committee agreed that modern farming requires the use of these chemicals. Emphasis in research programs should be directed to arrive at long-range solutions of increasingly important problems while at the same time efforts are continued to solve pressing immediate difficulties.

CORNELL EXPERIMENTS WITH INSECTICIDES IN FEEDS

Insecticides are being put in cattle feeds to kill livestock parasites. The procedure, still in experimental stages, promises an easier and more effective control of insects and mites that attack farm animals, a Cornell University scientist has reported.

Prof. John G. Matthysse, of the New York State College of Agriculture at Cornell, told representatives at the 1959 Nutrition Conference for Feed Manufacturers recently that economic gains could be expected if the method proves successful. He said the time-consuming processes of spraying and administering large pills to cattle through their mouths might be eliminated on many farms. He added, however, that the insecticides can only be used on non-dairy animals because of residues in milk.

Professor Matthysse said the insecticides being tried include Trolene, Ruelene, Dimethoate, and Dowco 109. The chemicals are fatal to parastic insects such as mites, ticks and flies which ingest the insecticides when they suck their victims' blood.

Professor Matthysse said most of the research is centered in chemical companies which produce the compounds. The products are now being tested by the Food and Drug Admnistration to determine their effects on people who eat meat from treated animals. The compounds have no poisonous effects on the animals themselves if sufficiently small amounts are given, Professor Matthysse declared, adding that great care is necessary in administering the compound under present conditions.

"In general, inclusion of insecticides in livestock feed is one of the most promising developments in livestock and poultry pest control," the Cornell professor stated. "Seasonal use will be very limited at the outset. The major pests are cattle grubs, which require treatment in September and October here in the northeast."

Professor Matthysse said the method is well suited to the needs of small beef raisers, sheep and swine growers, and dairymen, because these producers seldom have the necessary equipment for power spray application of insecticides. "Cattle grub control definitely raises hide and carcass values," he concluded. "Many experiments have been conducted on cattle weight gains, and in most cases the treated animals have gained more than those that were left untreated. Some of the more impressive weight gains have been made during experiments with insecticides in feeds."

LIQUID AND GRANULAR SYSTEMICS SUCCESSFUL AGAINST BEAN PESTS

Experimental success with two systemic insecticides for use in both granular and liquid form against bean pests has been reported by USDA. Used in these forms, rather than as spray or dust, phorate (Thimet) and Di-Syston controlled two-spotted spider mite. Control lasted two to three months in experimental plots of lima beans.

Unlike conventional applications of spray and dust insecticides, soil applications of systemics are not destructive to natural predators and parasites of crop pests, USDA said.

In the experiments, conducted in southern California, dosages of two or four pounds of insecticide per acre gave good control of western flower thrips, a crop pest also present in experimental plots, but reduced plant stands. For control of mite, however, scientists found dosages as small as ½ pound or less can be used with good results and little damage to stand.

PHOSPHATE FERTILIZERS COMPARED IN VA. TESTS

What is the best phosphate fertilizer to use on Virginia crops?

The answer to this question is the aim of some long-term tests being conducted at various locations in the state by the Virginia Agricultural Experiment Station.

J. A. Lutz, assistant agronomist at the main station at Virginia Polytechnic Institute, says that so far triple superphosphate has been slightly superior to diammonium phosphate in virtually every test. And in one experiment at VPI, rock phosphate was reported to have been decidedly inferior to triple superphosphate. When adequate amounts of nitrogen and potash were applied along with 40 pounds per acre of phosphorus, the yield of wheat from the rock phosphate was 11.1 bushels per acre, as compared to 23.8 bushels per acre from triple. A similar experiment at Staunton showed less difference to the response of wheat to rock phosphate and triple superphosphate than that noted at Blacksburg.

Triple superphosphate and diammonium phosphate were compared on alfalfa at Blacksburg. The diammonium phosphate produced 82 per cent as much alfalfa as did the triple superphosphate. Triple superphosphate also was better than diammonium phosphate in one test with corn on Cecil soil.

In a test at Staunton, triple superphosphate was slightly superior to diammonium phosphate with each crop in a rotation of wheat, red clover and corn. Diammonium phosphate produced 92 per cent as much wheat, 90 per cent as much red clover and 97 per cent as much corn as did the triple superphosphate.

At Blacksburg, diammonium phosphate produced 92 per cent as much wheat, and at Warsaw 97 per cent as much wheat as did triple superphosphate.

Equipment Supplies

BULK BODIES IN 2–5 TON SIZES FROM KNOEDLER

Bulk delivery of fertilizer with any type of truck is made possible by its auger-equipped truck bodies, reports Knoedler Manufacturers, Streator, Ill. The galvanized steel body is available with weather-tight cover, sack hauling space and a hydraulically operated boom auger to reach storage facilities on the farm.

Basic models are the 12-ft. and 8-ft. lengths, with top box extensions increasing capacity of each so that actual range of sizes is 2, 2½, 3, 4 and 5 tons. Twin compartments permit hauling different types of fertilizers. A "guillotine" shut-off system is available to allow either compartment to be unloaded at any time. For details,

CIRCLE 29 ON SERVICE CARD

TWO NEW ATTACHMENTS FOR THE KRAFTPACKER

Development of two new Kraftpacker attachments has been announced by Kraft Bag Corp. One is to add and mix a desired amount of regular or pulverized insecticide or herbicide to each bag of fertilizer as it is filled, and the other to add liquid insecticide or herbicide to the fertilizer. Amounts of either type can be carefully controlled according to requirements of the packager, Kraft said.

To obtain complete data on the attachments,

CIRCLE 30 ON SERVICE CARD

BURROWS PRODUCES WEIGH-BURRO SCALE

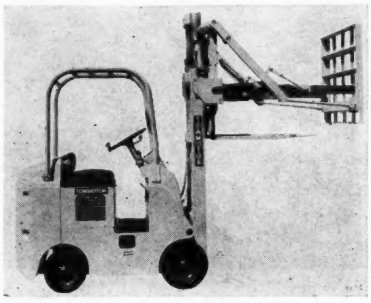
Burrows Equipment Co. has announced production of its new Weigh-Burro bulk scale. It incorporates a double-beam, custom scale, increased axle clearance for mobility on rough floors, reinforced construction, easy operation and maintenance, plus improvement in over-all appearance, Burrows reports.

The standard Weigh-Burro has a capacity of up to 1,000 lb. with scale readings down to ½ lb. The company said that the scale can be custom-built to meet any special application.

It operates on a gravity discharge principle using an 8" x 14" dump gate. For more information,

CIRCLE 31 ON SERVICE CARD

"STREAM LINER" LIFT TRUCK



This Model 461 fork lift truck in Towmotor's new "Stream-Liner" series is equipped with hydraulically-operated unloader accessory. It deposits heavy loads in warehouses and storage areas by "pushing" entire load from the lift truck forks with one motion. Wheelbase is 46 inches. More information can be obtained by circling 32 on the Reader Service card.

FLO-MIX "BRAIN CENTER"

A device for fingertip control of liquid fertilization of the soil under pressure has been announced by Flo-Mix Fertilizers Corp. The gadget is known as the "Brain Center" because it converts anhydrous ammonia into aqua ammo-

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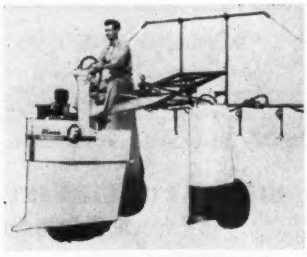
$3,000,000 Liquidation Chemical Plant at Orange, Texas. Type 316 Stainless Steel Tanks, Kettles, Heat Exchangers, Columns, Stills, Crystallizers, Centrifugals, Pumps, Valves, etc. Wonderful values. Send for list. Perry Equipment Corp., 1430 N. 6th St., Philadelphia 22, Pa.

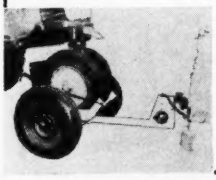
FOR SALE: Unused #9 Sturtevant rotary blender, 150 cu. ft. T304 st. st. dry material handling system, including: 1800 cu. ft. weigh hoppers; AJAX "Lo-veyor" shaker conveyors; bucket elevators; screw conveyors; all T304 st. st. Send for details. Perry Equipment Corp., 1430 N. 6th St., Phila. 22, Pa.

FOR SALE: (2) 7750 gal. and (5) 4650 gal. phenolic lined horizontal storage tanks. Excellent for liquid fertilizer storage. Best Equipment Corporation, 1737 W. Howard St., Chicago 26, Ill. AMbassador 2-1452.

HIGHER PROFITS WITH Finco SPRAYER

One basic self-propelled unit—the Finco Crop Protector—for year 'round use on all jobs. Handles applications of all chemicals; provides weed and insect control. Ideal for application of liquid fertilizer, regardless of ground conditions.





Answer all tractor transportation problems with the new Finco 5th Wheel Trailer.

Exclusive dealerships and distributorships open. Write today for full information.

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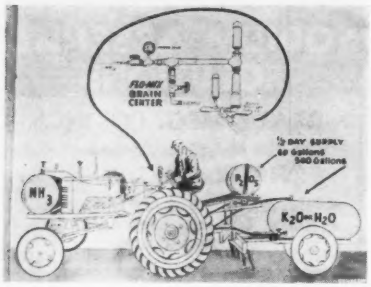


nia or combines with a potash solution to form ammonium potash.

Of stainless steel construction, the device consists of mixing chambers, valves, pressure gauge and tubes. Tubes connect by a series of hoses to the ammonia and water tanks (potash solution may be substituted for water) and to nozzles which spray the liquid fertilizer into tiny furrows made by small, sharp cutting blades.

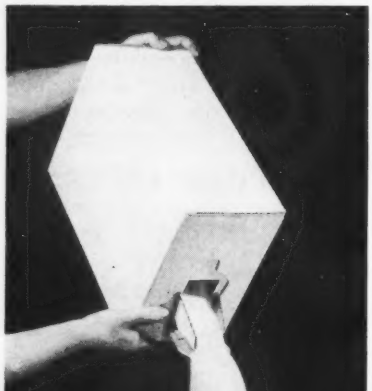
It can be easily installed on any type or size farm tractor, Flo-Mix reports. For further information,

CIRCLE 33 ON SERVICE CARD

CCC DEVELOPS SIFT-PROOF BOX WITH POURING SPOUT

A sift-proof corrugated box with a pouring spout, designed for domestic packaging of all granular and powdered materials, is now available from the Fibre Drum and Corrugated Box Div. of Continental Can Co.

Adaptable to conventional auto-



matic packaging equipment, the box is filled from the bottom or non-pour spout side. Box corners are sealed for sift-proof packaging by knife-cutting the flaps shy of the scores instead of using conventional slots. Projected packing uses of the box include chemicals, fertilizer, lawn or garden seed. Complete information can be had by

CIRCLING 34 ON SERVICE CARD

UNION INTRODUCES AUTO. BAG HANGER

An automatic bag hanger which supplies empty open-mouth multiwall bags to a filling machine and places them on the loading spout has been announced by Union Bag-Camp Paper Corp. Adaptable to all Union I&C Bagger models, the auxiliary machine eliminates the need for a bag filling operator, the manufacturer said.

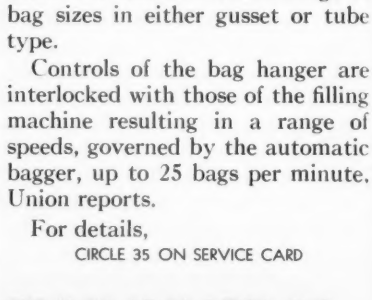
By utilizing both vertical and horizontal adjustments, the machine can handle a broad range of bag sizes in either gusset or tube type.

Controls of the bag hanger are interlocked with those of the filling machine resulting in a range of speeds, governed by the automatic bagger, up to 25 bags per minute, Union reports.

For details,

CIRCLE 35 ON SERVICE CARD

THE H-25 AT HI-ACRES, INC.

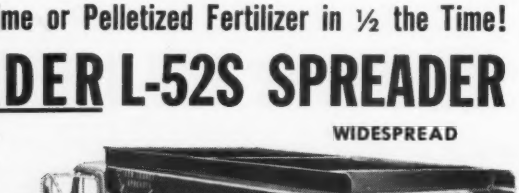


Hi-Acres, Inc., Fertilizer Div., operates a new plant at Groveland, Fla., producing fertilizer for use in citrus and general farm cultivation. Above, the company's H-25 Payloader tractor shovel handles a mixture of 8-2-10, used for citrus feeding. With an operating capacity of 2,500 lbs. the Hough unit is reported to be widely used throughout the plant for conveying material from storage areas to the mixer. It also is used to unload railroad cars, charge hoppers, and general plant maintenance and clean-up work. To obtain more information on the H-25, simply circle 36 on the Service Card.

Covers Field With Lime or Pelletized Fertilizer in ½ the Time!

NEW LEADER L-52S SPREADER

- **25 H.P. Engine drives twin 24" spinners for widespread applications!**
- **Cuts in-the-field operating costs, time on the job and soil compaction 50%. Some owners cover an acre a minute!**
- **Means more jobs each day, more profit per job greater customer satisfaction!**



DEMAND FOR CUSTOM SPREADING IS GROWING

More and more farmers want the convenience of a bulk spreading service. It saves them time, equipment and maintenance expense *plus*, up to $4–$8 per acre over bagged goods. Let us help you get started in business with "New Leader".

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READER SERVICE

FREE INFORMATION to help you solve fertilizer, pesticide problems

Chemicals

1—WEED KILLER WALL CHART

A convenient wall chart outlining recommendations for use of Stauffer weed killers is available from Stauffer Chemical Co. Included are data on wheat, barley, oats and corn, chemicals, application rates and weeds controlled. Sections also are allocated to control of resistant weeds and brush along fence rows, ditches, roadsides and aerial application methods for treating sage brush, mesquite, shinnery oak, post oak and blackjack oak. Copies are available without charge. Simply

CIRCLE 1 ON SERVICE CARD

2—HANDLING & STORAGE OF PHOSPHORIC ACID

"The Handling and Storage of Phosphoric Acid" is the title of a technical service bulletin published by Victor Chemical Works Div. Chapters are included on manufacturing, properties, bulk receiving and storage, storage tank construction, specifications and safety rules. A supplement lists equipment and manufacturers. For your copy,

CIRCLE 2 ON SERVICE CARD

3—POTASH BROCHURE

Publication of a four-page, two-color brochure has been announced by United States Potash Co. Description, typical chemical analysis, typical particle size analysis and uses for three grades of muriate of potash are included, along with shipping information. To receive a copy, just

CIRCLE 3 ON SERVICE CARD

4—DICALITE BULLETIN

"Dicalite Mineral Fillers" is the subject of a 12-page booklet from Dicalite Dept., Great Lakes Carbon Corp. After answering the question, "What is Diatomite? , the booklet discusses chemical properties, density and bulking effects, particle structure, surface area, porosity and absorptiveness, heat conductivity and heat resistance and other characteristics. In a section on applications of Dicalite, the booklet describes use in fertilizers and insecticides. To secure a copy, simply

CIRCLE 4 ON SERVICE CARD

5—PESTICIDE FORMULATION

Witco Chemical Co., Inc., is offering pesticide formulators a manual, titled "Pesticide Formulation" which describes Emulsol emulsifiers for the agricultural industry. It's easy to get a free copy—

CIRCLE 5 ON SERVICE CARD

6—REVISED CHEMICAL PRODUCTS LISTS

A newly revised products list of "Hooker Chemicals" has been published by Hooker Chemical Corp. The bulletin contains brief descriptions, physical data, uses and shipping information for the many chemicals listed. Those manufactured by Hooker's Phosphorus Div. are listed separately and described in a two-page supplement which is also available. To obtain your copy of the 12-page products list and supplement, just

CIRCLE 6 ON SERVICE CARD

7—DOW PRODUCTS CATALOG

The 1959–60 edition of The Dow Chemical Co.'s general catalog is now available. This 44-page compilation, "Products of The Dow Chemical Co.," lists properties and uses of some 375 industrial, pharmaceutical and agricultural chemicals currently produced. Developmental items as well as established products are included. For your copy,

CIRCLE 7 ON SERVICE CARD

8—DIXOL NITROGEN SOLUTIONS BOOKLET

A new, convenient guide for the fertilizer production man, on Dixol Nitrogen Solutions, has been published by Commercial Solvents Corp. Included in the booklet are sections on types and uses of nitrogen solutions; ammoniation of superphosphates; ammoniation practice; granulation; formulation; storage of finished fertilizer; shipping, handling and storage of Dixol nitrogen solutions; safety precautions, first-aid measures and reference tables. For your copy

CIRCLE 8 ON SERVICE CARD

Process Equipment

9—BULLETIN DESCRIBES HEAT EXCHANGERS

A new 12-page illustrated bulletin on Karbate impervious graphite immersion heat exchangers and circulating steam jets for heating or cooling corrosive solutions in all types of tanks has been published by National Carbon Co., Div. of Union Carbide Corp. Separate sections on plate, bayonet and coil type immersion heat exchangers include general descriptive, installation and operation information. Dimensioned sketches of each type give complete construction details, and tables present information on weights and effective surface areas. For a copy,

CIRCLE 9 ON SERVICE CARD

10—CHEMPUMP BULLETIN

Specifications, description, and typical performance curve for Series DE multistage seal-less Chempumps suitable for heads to 220 feet are given in a new bulletin from Chempump Div., Fostoria Corp. The manufacturer says the pumps require no stuffing box, seals, lubrication or special foundations. For your copy of the bulletin

CIRCLE 10 ON SERVICE CARD

11—FORMULA CAPSULE DESCRIBED IN BROCHURE

A formula capsule reported to eliminate manual errors in blending, proportioning and batching operations by automatically setting correct proportions of chemicals, feeds and similar materials is described in a product data sheet from Richardson Scale Co. Advantages of the capsule are listed and steps to be taken in setting up a formula are enumerated. Photographs and drawings illustrate the equipment. A copy will be yours, if you

CIRCLE 11 ON SERVICE CARD

12—CATALOG GUIDE FOR PROCESS INDUSTRIES

A 32-page catalog guide of equipment for the process industries has been released by Allis-Chalmers. Included are descriptions of compressors, vacuum, centrifugal, axial flow and turbine pumps, and valves for fluid flow; crushers and grinding and roller mills for disintegration, mixing and agglomeration; vibrating and gyratory screens for dry separation; blade mills, pool washing screens and log washers for liquid separation; kilns, dryers, slakers, pelletizers, coolers and liquid heaters for heat transfer. Copies are available by

CIRCLING 12 ON SERVICE CARD

13—FILTER CLOTH COMPARISON CHART

A comparison chart has been published by Wheelabrator Corp. as a guide to the selection of filter cloths commonly used in dust and fume collectors. Cotton, nylon, orlon, dacron and silicone treated glass are classified according to temperature limits; strength; resistance to acid, alkali and abrasion; and relative cost per bag. For your copy of the chart, just

CIRCLE 13 ON SERVICE CARD

14—USE OF HASTELLOY ALLOY C

When used for acid distributor piping in the TVA type fertilizer ammoniator, Hastelloy Alloy C gives many times the

how to use the READER SERVICE CARD

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See pages 39 and 40 for information on these Reader Service numbers:

29—Knoedler Bulk Bodies
30—Kraftpacker Attachments
31—Weigh-Burro Scale
32—"Stream-Liner" Lift Truck
33—Flo-Mix Brain Center
34—CCC Box with Pouring Spout
35—Union Auto. Bag Hanger
36—H-25 Payloader

life or ordinary piping, and reduces waste of acid and ammonia, reports Hayes Stellite Co. A field report is available describing three installations of the piping. Sizes and prices also are included. For your copy

CIRCLE 14 ON SERVICE CARD

15—SYMONS V SCREEN

Nordberg Mfg. Co. says its Symons V-Screens are used to provide big capacity, efficient screening in hundreds of applications, including phosphate rock and limestone mining, chemical and fertilizer processing. An eight-page illustrated bulletin from the company tells how the screen works, describes its advantages, and includes drawings showing basic dimensions. For your copy

CIRCLE 15 ON SERVICE CARD

16—HELICAL GEAR SPEED REDUCERS

Information on helical gear speed reducers is contained in Book 2751, published by Link-Belt Co. The 20-page book consolidates all of the company's expanded line of In-Line helical gear speed reducers and provides complete selection data on 20 reducer sizes in double, triple and quadruple reductions. Tables of load classes and service factors are included. Horsepower and torque ratings, dimensions, overhung load for high and low speed shafts and mounting arrangements are given along with a resume of construction features. A copy can be obtained by

CIRCLING 16 ON SERVICE CARD

Materials Handling

17—ST. REGIS VALVE BAG PACKER

St. Regis Paper Co.'s product bulletin on the 161-FB automatic valve bag packer gives complete information on the unit—operating principles, features, air and electrical requirements, and a floor plan for a typical installation with auxiliary equipment. Close-up views of the automatic bag discharge, bag clamps and release cams, pneumatic belt take up, and scale beam lock illustrate the bulletin. To get your copy, just

CIRCLE 17 ON SERVICE CARD

18—COLLAPSIBLE CONTAINERS

United States Rubber has released an eight-page booklet on its 55-gallon size collapsible container. It covers inflating, filling, handling, emptying and cleaning. A serviceability table lists acids, bases and salts for which the container is suitable. U.S. Rubber reports that the container also is available in 500-gallon and 2500-gallon sizes. To obtain the booklet,

CIRCLE 18 ON SERVICE CARD

19—YALE'S NEW LIFT TRUCK LINE

Yale Materials Handling Div. reports that its new line of LP-Gas and gasoline powered industrial lift trucks feature design advances in power transmission, mast construction, compactness of size, operating speeds, stability and maintenance. It is being introduced in 3000, 4000 and 5000 pound capacity models in both cushion and pneumatic tire types. Full information on the line is available by

CIRCLING 19 ON SERVICE CARD

Application Equipment

20—SCHELM CATALOG

Schelm Brothers, Inc. has released its 1960 catalog describing aluminum tanks, solution transfer units, skids for tanks, pull type applicators, spray booms, repair parts and accessories. Illustrations, dimensions and prices are given. To obtain your copy

CIRCLE 20 ON SERVICE CARD

21—CATALOG OF NOZZLES AND ACCESSORIES

Spraying Systems Co. spray nozzles for farm, ranch, orchard and garden spraying are covered in a new catalog from the company. Included are TeeJet spray nozzels for boom and broadcast spraying of herbicides, insecticides and fertilizers; row crop spraying of insecticides; roadside spraying; flow regulators; fittings; shut-off valves; spray guns; line strainers and suction strainers. For your copy of the 20-page catalog,

CIRCLE 21 ON SERVICE CARD

Miscellaneous

22—HARRIS LAB SERVICES

Availability of a new illustrated brochure describing its special and routine laboratory services has been announced by Harris Laboratories, Inc., of Lincoln, Neb. In addition to standard services in research and testing for the farm chemicals, pharmaceutical and food industry, several unusual facilities are listed. A free copy is available. Just

CIRCLE 22 ON SERVICE CARD

23—FIELD CUTTING OF GLASTEEL PIPE

A new Glasteel pipe (glass inside, steel outside) that can be field cut to required lengths was introduced at the 199[illegible] Chemical Show by Pfaudler Div. of Pfaudler Permutit Inc. Rated at 150 p[illegible] and available in 1-½", 2" and 3" diameters, the pipe offers wide application i[illegible] highly corrosive services, the manufacturer reports. Further information ca[illegible] be had by

CIRCLING 23 ON SERVICE CARD

24—ONE-OUNCE DUST MASK

The Flex-A-Foam dust mask is subject of a folder from Flexo Products, Inc. The mask is described as filtering non-toxic dusts as small as 1/25000 of an inch, while weighing only one ounce complete. Price lists for the masks, latex filters and headbands also are included. To obtain your copy

CIRCLE 24 ON SERVICE CARD

25—ELECTRONIC SENSING CONTROL

Methods of operation, details of components and 16 applications of the Security Electronic Sensing Control are covered in a bulletin published by Security Controls, Inc. The control detects improper material flow in chute, reveals changes in moisture content, etc. The Security unit is set up to any given constant at a given time interval. It senses both metallic and nonmetallic objects. A copy of the bulletin is obtainable by

CIRCLING 25 ON SERVICE CARD

26—COMPARING COATING SYSTEMS

Carboline protective coating systems for concrete floors are compared in a new four-page chart released by Carboline Co. The chart shows by columns resistance of each system to chemicals, thermal shock, abrasion and temperature. It also gives the compressive strength, impact resistance, skid proof properties, thickness and cost per square foot of individual systems. A chart will be sent to you, if you

CIRCLE 26 ON SERVICE CARD

27—MOISTURE INHIBITOR

Harmful effects of moisture in electrical equipment are reportedly being eliminated by application of CRC Moisture Inhibitor. Corrosion Reaction Consultants, Inc., says the product eliminates the effect of wicking, reduces electrical failures and costly downtime. One application, by total immersion, by pouring, brushing or spraying, under most conditions will provide protection for at least a year, the firm claims. For complete technical data,

CIRCLE 27 ON SERVICE CARD

28—DUST AND FUME FILTRATION

A descriptive four-page folder, "The Modern Solution to Fume and Dust Filtration Problems," is available free of charge from Menardi & Co. Among applications for the company's Maco-Glas fabric filter bags covered in the folder are in the fertilizer industry. It states that the bags have been successful in collecting dust from triple superphosphate production. The folder will be mailed to you, if you

CIRCLE 28 ON SERVICE CARD

NEEDED: IDEAS FOR SUITABLE FIELD APPLICATION OF GRANULAR HERBICIDES

Need for basic research on granular herbicides emphasized by USDA expert at Northeastern Weed control Conference; lists four basic research problems

* By L. L. DANIELSON

REVIEW OF granular herbicide indicates that a balance between basic and applied investigations is now being achieved, whereas early research was concerned primarily with the direct solution of practical problems.

Accumulated data from the applied studies indicate some of the practical advantages and disadvantages of granular herbicide formulations. Some of the advantages are (1) their physical selectivity, (2) their convenience in application, and (3) the broadening of herbicide usage. Some of the disadvantages are (1) their inability to control established weeds in growing crops, (2) some herbicides do not lend themselves to granular formulation, and (3) specialized equipment is required for commercial field application. Research has shown that granular and spray formulations of herbicides may be used interchangeably for certain weed control problems, but it is also clear that each formulation can be used to perform specific functions not achievable with the other.

FOUR PROBLEM AREAS LISTED

Lack of suitable field-application equipment for granular herbicides has been a weak link between research and practical use. This problem is being solved at present by the development and sale of specialized commercial equipment by a number of companies.

The need for basic research on granular herbicides has been recognized and preliminary investigations on a number of the fundamental aspects of their herbicidal activity are in progress. These basic problems may be grouped in four general categories as follows: (1) chemical, (2) physical, (3) biological, and (4) environmental.

The chemical problems are concerned with the chemistry of the herbicides, their solvents, the required surfactants, and other adjuvants used in granular herbicide formulation.

The physical problems are associated with granule density, size, structural permanence, adsorptive capacity, and color. Some of the more obvious basic biological problems in the use of granular herbicides are those associated with the anatomical and morphological characteristics of plants. These problems involve comparisons of herbicidal activity in relation to such factors as upright versus procumbent or rosette growth habits, terminal versus intercalary growth patterns, flowering or fruiting stages of development versus vegetative stages, hairy versus non-hairy leaves and stems, waxy versus non-waxy plant surfaces, and smooth versus wrinkled or savoyed leaves. The initial herbicidal activity and residual activity of granular herbicides are affected by environmental factors such as soil composition, type of irrigation, rainfall, humidity, wind velocity, temperature, sunlight, and interactions of these factors.

Initial contributions in these basic studies indicate their value and the need for intensifying such research as a means of implementing the continuous progress in the solution of applied problems. ▲

*Plant physiologist, Crops Research Division, Argicultural Research Service, USDA, Beltsville, Maryland. *Abstract of paper presented at Northeastern Weed Control Conference January 6-8.*

PEST REPORTS

By Kelvin Dorward

THE ADULT ***grasshopper*** survey conducted during the latter part of the summer of 1959 revealed infested acreage to be low. Although the counts made in the late summer are not a positive criteria of the infestation that may be expected the following season, they do indicate a potential. Weather conditions, parasites and predators, and other factors are instrumental in determining the actual infestation that may develop.

Range areas in 13 western and midwestern states carrying at least a moderate number of adult grasshoppers, eight or more per square yard, total slightly more than five and one-half million acres. The largest acreage, almost 1,200,000 acres, is in California, Montana is next with 1,000,000 acres, and Colorado third with 990,000 acres. Other states having more than 100,000 acres with moderate or above populations are: Texas with 873,000; New Mexico with 736,000; Wyoming with 380,000; and Idaho with 255,000 acres.

Adult grasshopper populations found on croplands during the late 1959 survey were slightly below those of last year. States with the largest acreage carrying infestations which might produce damaging grasshopper populations in 1960 are: California, Colorado New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wisconsin.

The rice disease, hoja blanca, and/or its planthopper carrier, ***Sogata orizicola,*** has now been found in 14 Louisiana parishes; namely, St. Tammany, St. James, St. John the Baptist, St. Marys, St. Landry, La Fourche, Evangeline, Madison, Vermillion, Ascension, Assumption, Iberville, Terrebonne, and St. Martin. Forty-seven properties are involved. When the disease or vector is found, eradicative measures are immediately initiated. Phosdrin was used in treating rice almost ready for harvest; otherwise the treatment consisted of a mixture of malathion and DDT.

A survey entomologist examines catch of grasshoppers in his sweep net to help estimate degree of infestation.

No specimens of the carrier were found outside of Louisiana this season. The disease, however, was identified from rice planted on a nursery at Biloxi, Harrison County, Mississippi and from two blocks of volunteer rice on Rabbit Island in Palm Beach County, Florida. Extensive negative surveys were conducted in Arkansas, California and Texas.

The cooperative survey to determine the number of ***boll weevils*** entering hibernation this fall has been completed in several areas. In Mississippi the trash samples to be examined were collected from the Lower Delta, Central Delta, North Delta and Hill section of the state. The average number of live weevils found per acre of trash averaged 5,127 for all areas. The average for the same areas was 3,792 in 1958, and 6,715 in 1957.

Collection of trash samples were made in the Louisiana Parishes of Madison, East Carroll, and Tensas. The average number of live weevils per acre of trash for the tri-parish area was 8,097. In 1958 the comparable number was 5,756 and 8,043 in 1957 for the same area.

The Tennessee boll weevil hibernation survey was conducted in McNairy County. Live boll weevils found averaged 1,882 weevils per acre of trash. The average for the same area was 1,214 live weevils per acre of trash in 1958 and 2,365 in 1957.

The coastal plains area of North and South Carolina averaged 5,082 live boll weevils per acre of trash. The average for the same area in 1958 was 4,625 per acre and 11,374 in 1957.

The fall boll weevil hibernation survey was conducted in Texas for the first time this year. Trash collections were made in McLennan, Falls, Hill and Limestone Counties in the central area of the state. The average number of live weevils per acre of trash for the area was 6,631. Comparative figures are not available for previous years. However, observations indicate that weevils in greater than normal numbers were available to enter hibernation quarters this fall.

Although weather and other factors are responsible for the populations that will develop next spring, the number of boll weevils entering hibernation in the fall do indicate a potential population for next year. A spring survey will be conducted in the same general areas to determine the number of overwintering weevils.

The ***alfalfa weevil,*** long known to be in the western states, but found in the eastern United States for the first time in Maryland in early 1952, is now known to be in Kentucky. Two adult weevils were taken July 7, 1959, in an alfalfa field 6 miles south of Horse Cave, Hart County. Further surveys failed to reveal additional specimens.

Following the initial find of the alfalfa weevil in Maryland, the insect has now been found in 16 eastern, central, and southern states ranging north to Massachusetts, south to Alabama, and west to Kentucky.

The ***European corn borer,*** which has been gradually spreading to the south and southwest primarily in recent years, was recently found in Texas. This first find was a single specimen from a field of late corn near Texarkana, Bowie County, Texas. Surveys in 6 northeastern counties in that area of Texas failed to reveal additional specimens.

Although populations have been light the ***greenbug,*** by the latter part of November, had been found widely scattered in both Oklahoma

and Texas. Light infestations of the insect were found in 11 of 18 Texas panhandle counties surveyed. The infestations were found only in large volunteer clumps around irrigation ditches or where moisture had been abundant for some time. No greenbugs were found in drilled or small volunteer wheat.

By the latter part of November, greenbugs had been found in Jefferson, Marshall, Kingfisher, Bryan, Love, Payne and Washita Counties, Oklahoma. The heaviest count reported was 6 per linear foot of row.

A report dated November 13 stated that greenbugs were killing two-thirds of an oat field in Worcester County, Maryland.

The ***khapra beetle*** was again found in California after 8 months of intensive inspection. At a Brawley, Imperial County mill a medium infestation was found in bins and salt sacks. ▲

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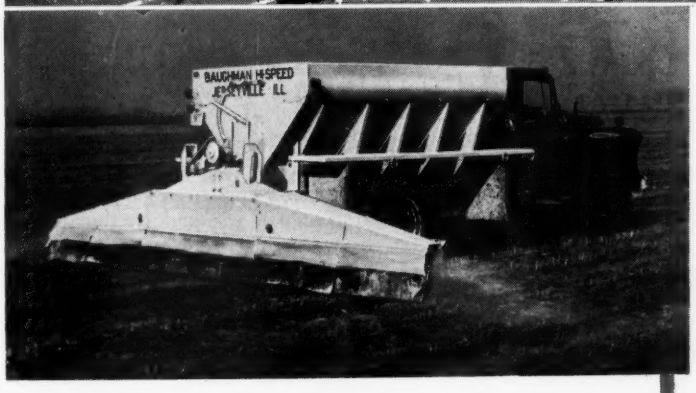

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PATENT REVIEWS

By Dr. Melvin Nord

HERBICIDES AND PLANT GROWTH REGULANTS

U. S. 2,900,243, issued Aug. 18, 1959 to Norman J. Lewis and assigned to Monsanto Chemical Co., discloses the herbicidal characteristics of N-(p-halophenyl) -1, 2-cyclohexanedicarboximides.

U. S. 2,900,411, issued Aug. 18, 1959 to James Harwood, Robert G. Brault, and Richard A. Reck, assigned to Armour & Co., discloses water insoluble plant hormone carboxylic acid salts of higher alkyl amines.

U. S. 2,902,356, issued Sept. 1, 1959 to Raymond W. Luckenbaugh, assigned to E. I. du Pont de Nemours & Co., discloses the use as herbicides of certain 2-phenylimino, 3-alkyl oxazolidines.

U. S. 2,903,347, issued Sept. 8, 1959 to Loyd Q. Boyd and assigned to Standard Oil Co., discloses the use of certain organic thiocyano esters (e.g. beta-butoxy-beta'—thiocyanodiethyl ether) for the defoliation of plants.

U. S. 2,903,348, issued Sept. 8, 1959 to William H. Bugmann, Jr., Harry W. Rudel, and Jeffrey H. Bartlett, assigned to Esso Research & Engineering Co., describes methods for defoliating cotton with isooctyl xanthoacetic acid.

U. S. 2,904,421, issued Sept. 15, 1959 to William H. Seaton and assigned to Monsanto Chemical Co., describes a method of destroying grass with 2, 4, 5-trichloroanisole.

U. S. 2,904,422, issued Sept. 15, 1959 to Joseph M. F. Leaper, John R. Bishop, and Wood P. Anderson, assigned to Amchem Products, Inc., describes a process of eradicating weeds with certain organic aromatic carbonates.

U. S. 2,904,423, issued Sept. 15, 1959 to James D. Stone and Leonard M. Stahler, assigned to United States Borax & Chemical Corp., describes a process for producing a dry, granular herbicidal composition consisting of sodium borate and an insoluble herbicidal material in mutually adhered and non-segregable condition.

PESTICIDES

U. S. 2,900,293, issued Aug. 18, 1959 to Lawrence H. Nash discloses the pesticidal activity of manganese ammonium methyl xanthate and zinc ammonium methyl xanthate. These substances act as fungicides, bactericides, insecticides, and microbiocides.

U. S. 2,900,295, issued Aug. 18, 1959 to Bobbie D. Stone and assigned to Monsanto Chemical Co., discloses nematocidal compositions containing copper (I) complexes of thiourea and substituted thioureas.

U. S. 2,900,296, issued Aug. 18, 1959 to Joseph W. Baker and George A. Sand, assigned to Monsanto Chemical Co., discloses nematocidal compositions containing O,O-dialkyl nitrobenzoylphosphonates.

U. S. 2,900,297, issued Aug, 18 1959 to James C. Wygant and assigned to Monsanto Chemical Co., provides fungicidal compositions containing 1, 2, 3, 4, 6, 7, 7,-heptachloro -5 -phenylbicyclo (2,-2,1) -2-heptene.

U. S. 2,900,298, issued Aug. 18, 1959 to Ernest G. Jaworski and Van R. Gaertner, assigned to Monsanto Chemical Co. discloses fungicides which are particularly useful as eradicants for wheat rust, containing the reaction product of an α,β-mono olefinic aldehyde and an aromatic hydrazine.

U. S. 2,900,299, issued Aug. 18, 1959 to Marion W. Harman and John J. D'Amico, assigned to Monsanto Chemical Co., discloses the use of aminoethylthiazoles as fungicides, particularly for the control of wheat rust.

U. S. 2,900,409, issued Aug. 18, 1959 to Samuel A. Heininger and Eugene L. Ringwald, provides 3-(phenylthio) propionitriles as miticides.

U. S. 2,902,401, issued Sept. 1, 1959 to James Harwood, Richard A. Reck, and Walter W. Abramitis, assigned to Armour & Co., discloses fungicidal compositions containing the double salts of heavy metal salts and certain amine hydrohalides.

SEED TREATMENT

U. S. 2,900,303, issued Aug. 18, 1959 to Ernest McWilliams and assigned to The Stanford Seed Co., Inc., provides a composition suitable for use as a coating dust for cereal grain seeds, so that the seed is rejected as edible by birds, fowl, and rodents.

The composition consists of finely divided iron oxide, calcium carbonate, and a water-insoluble copper salt such as copper oxalate.

FERTILIZERS

U. S. 2,901,317, issued Aug. 25, 1959 to Paul O. Marti, Jr., assigned to Standard Oil Co., discloses an anti-caking agent for ammonium nitrate, namely finely ground copper oxide.

U. S. 2,901,340, issued Aug. 25, 1959 to Georg Von Semel and Heinz Lehmann, assigned to Pintsch Bamag A.G., describes a method of producing highly concentrated mixtures of nitric acid and phosphoric acid, by the absorption of nitrogen oxide gases by phosphoric acid solutions.

U. S. 2,903,336 and **2,903,337,** issued Sept. 8, 1959 to Gunter H. Gloss and William J. McGinnis and assigned to International Minerals and Chemical Corp., describe processes for the recovery of potassium values from langbeinite ore.

U. S. 2,903,349, issued Sept. 8, 1959 to Louis D. Bryant and assigned to Columbia-Southern Chemical Corp., discloses fertilizer compositions containing calcium silicate and having anti-caking and soil conditioning properties.

U. S. 2,904,424, issued Sept. 15, 1959 to Edward P. Chapman, Jr., and John A. Wood, assigned to Peerless Oil and Gas Co., describes a process for preparing a long life fertilizer, consisting of mixing perlite ore with a water-soluble plant nutrient salt, and expanding the mixture by heating to 1500–2000°F.

U. S. 2,904,425, issued Sept. 15, 1959 to Otto Kippe and assigned to Paul Tobeler, describes a method of converting coarse, moist blast furnace slag from an openly exposed moist slag heap into usable lime-containing fertilizers.

U. S. 2,903,131, issued Sept. 8, 1959 to Charles E. Heinrichs, assigned to Virginia-Carolina Chemical Corp. provides an improvement in the process in present use for the mining, washing, and flotation concentration of phosphate rock ores. The principal improvement involves the installation of a storage area between the washer and the flotation plant, providing the flotation plant with a constant quantity of flotation feed of uniform quality.

U. S. 2,901,864, issued Sept. 1, 1959 to Malvern J. Hiler and assigned to the Commonwealth Engineering Co. of Ohio, provides a soil conditioner containing native, unhydrolyzed dextran.

Suppliers Briefs

Clupak, Inc. reports that Crown Zellerback Corp. has begun producing Clupak paper at its Antioch, Calif., mill.

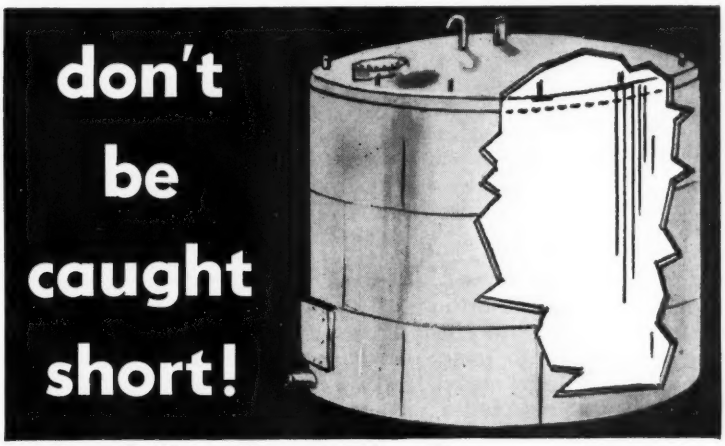
Hahn, Inc.'s recent Distributor Sprayer Clinic, attended by 90 distributors and salesmen, was based on the theme, "Step Up with Hi-Boy."

Hudson Pulp & Paper Corp. has named Robert Knight as district manager in western Missouri, Kansas and eastern Nebraska. He will headquarter in Kansas City.

Vulcan Containers, Inc. Eugene W. Gehm has been appointed sales manager, according to an announcement by Vern I. McCarthy, Jr., president.

West Virginia Pulp and Paper Co. Multiwall bag operations are being given full divisional status. Victor S. Luke has been named manager of the Multiwall Bag Div., responsible for all aspects of the division's activities, which are organized on a regional basis.

Yale & Towne Mfg. Co. Retirement of Elmer F. Twyman as senior vice president and assignment of his responsibilities for all company domestic and foreign materials handling equipment to John A. Baldinger, vice president, have been announced. George F. Quayle, assistant director of engineering of Yale Materials Handling Div., has been placed in charge of new product development.



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NEW CHEMICALS for WEED CONTROL

By M. W. MEADOWS*

TODAY we find ourselves in a most dynamic period as it refers to a widespread interest in the control of undesirable plant growth. This interest undoubtedly stems from the fact that we have a large number of old and new herbicidal materials to work with. New uses for old materials and a promise that the next new compound will be the answer to some hard to handle weed problem.

In this vein of thought we have made considerable progress during the past year.

The following is an attempt to list progress in various categories with new and old chemicals. Due to limited time and space it would be impossible to cover the many chemicals that deserve mention here.

EXPANDED USE OF GRANULAR MATERIALS:

Aquatics: Chemicals such as 2,4-D, silvex and Simazine are effective against many submerged rooted aquatics. A major problem has been to get the chemical down to the bottom of a body of water in sufficient concentration at a reasonable rate per acre to obtain control of the weeds.

Impregnation or absorption of the toxicant on a specially prepared granule that will sink to the bottom of a body of water before it disintegrates or releases the chemical has effectively answered this problem. In this manner a high concentration of the chemical can be placed near the root zone of a submerged plant without making the water useless for other purposes.

An interesting innovation of this method of controlling submerged weeds has arisen from the use of granular herbicides spread on ice during the winter months thereby simplifying the application procedure.

Nursery Crops: Granular herbicides such as CIPC, Simazine and Dinitro have proven to be very effective in controlling weeds in a wide variety of nursery stocks without injury to the nursery crop.

A major problem in this field is the perfection of equipment to properly apply the granular herbicide over a range of plants that vary so much in growth habit.

Air applications: The use of aircraft to apply dusts, fertilizers and sprays is an established practice. To date however not too much attention has been given to the application equipment necessary for applying granular herbicides.

There are many instances where this type application could be useful—weed control on waterways (even 2,4-D could be more widely used by this method); weed control on wet or rough fields that are not adapted to ground application equipment; brush control, etc.

Mulch alone and in combination with chemicals: Although mulch materials have been used for centuries, plastic materials have revived interest in this practice.

More recently machines have been perfected that can lay down mulch materials quickly and efficiently. Some attention has been given to machinery for planting or transplanting crops through the mulch material.

Some work has been done with paper mulchs that will break down during the course of a year. Plastic materials will not disintegrate so quickly and present a problem of soil tillage unless the plastic is removed before tillage in preparation to plant another crop.

A possible additional value of mulch materials is the increased effectiveness obtained with some soil fumigants that can be applied to the soil in conjunction with the mulch laying operation.

Combination of herbicides: In many instances the complex of weeds is such that no one material is available that will give adequate control.

CIPC plus Randox at 6 lbs. active of each material

* *Assistant Director of Research, Soil Building Div., G. L. F., Ithaca, N. Y.* *Presented at the Northeastern Weed Control Conference, Jan. 6, in New York City.*

has proven to be effective on the muck soils of New York State. Control of annual grasses, purslane, rag weed, smart weed, lambsquarter, chickweed, etc. has been attained with sprays or granulars containing the two herbicides.

Dalapon plus Dinitros—annual grasses have become an increasingly greater problem where Dinitros have been used as a pre-emergence weed control material on potatoes. The addition of about 3 lbs. Dalapon to the Dinitro spray mixture has resulted in good annual weed and grass control.

Amino Triazole plus Simazine—For purposes of soil sterilization a 1 to 3 mixture of these two materials has given excellent long lasting control of a wide variety of weeds. The combination gives an excellent burn down of existing foliage. Rates of about 6 to 12 lbs. active per acre of the combined ingredients have given soil sterilization for 6 months to 2 years.

New Approach to Brush Control: Pelleted or granular formulations of Fenuron and Urab offer a convenient method for controlling brush. The materials can be spread by hand or machine either broadcast or in a 3′ x 3′ grid system. This obviates the necessity for using a sprayer and hauling water.

NEW CHEMICALS:

Triazines: Atrazine at rates of 1 to 2 lbs. active material per acre has given excellent control of annual weeds and annual grasses when applied pre or early post emergence to corn. Late post emergence applications have been effective against many broadleaf weed species without any apparent effect upon the corn.

Rates of 4 to 5 lbs. active chemical per acre pre- or post emergence to the corn have given excellent seasonal control of nutgrass.

Amiben: Has afforded good annual weed and annual grass control in such crops as soybeans, peanuts, and carrots. A liquid spray applied at planting time has been effective at rates of 3–4 lbs. active ingredient per acre. Granular formulations at rates of 3–6 lbs. active per acre have shown promise on such transplanted crops as tomatoes, crucifers and peppers. The material, to be effective, must be applied before weeds emerge.

Fenac: Applied in the spring to quack grass 4″ to 6″ tall, plowed two weeks later and planted to corn has given good control of quack grass plus seasonal control of annual weeds and annual grass. Effective rates range from 2 to 4 lbs. active chemical per acre.

Silvex: Silvex is not a new compound but new uses are constantly cropping up. More recently it has showed promise in controlling cinquefoil in Birdsfoot trefoil as a late fall application at ½ to 1 lb. active; spotted knapweed at about 1½ lbs. active; and about ½ lb. active per acre has controlled dog fennel in wheat as a late fall, winter or early spring application.

Karsil (Niagara 4562): Used as a post emergence spray has shown promise on such crops as celery, carrots, parsley, parsnips, strawberries and sweet potatoes. Effective rates are around 4 lbs. active material per acre. A number of crops are tolerant of directional sprays of this compound.

Solan (Niagara 4512): Used as a post emergence spray has been effective in controlling annual broadleaf weeds in tomatoes, carrots, celery and strawberries. Effective rates have been around 4 lbs. active chemical per acre.

Dacthol (DAC 893): A number of crops have shown tolerance to the chemical. Pre-emergence applications to such crops as carrots, cole crops, tomatoes and beans at rates of 4–8 lbs. have been effective. Post emergence spray applications to tomatoes and cole crops have been effective. The material is effective against germinating weed seeds.

Of considerable interest is the effectiveness of this material in controlling crab grass in lawns, at the rate of 8–10 lbs. active chemical applied pre-emergence to the crab grass, as a spray, has given excellent results.

Zytron (Dow M-1329): As a pre-emergence spray application this compound has shown promise in the control of weeds in carrots.

Excellent control of crab grass has been obtained in turf. Granular formulations applied pre-emergence have been more effective than sprays.

Effective rates have been around 10–15 lbs. per acre.

Eptam Analogs: Eptam has shown some excellent uses particularly in the control of nut grass in such crops as beans and potatoes.

Several of the analogs have shown excellent activity against weeds with good crop tolerance.

Stauffer 2061 incorporated in the soil at rates of 3–4½ lbs. per acre active chemical shows promise on such crops as the crucifers, spinach, corn, tomatoes and beans. An interesting observation has been the difference on the waxy bloom of the crucifers—Eptam destroys the bloom, 2061 does not.

2,3,6 TBA: An additional use for this material has been the effective control of Bindweed (*Convolvulus sepium*) in Concord grape vineyards. Used as a spray at rates of 0.8 to 1.0 lbs. active chemical per acre in late August has resulted in no damage to grape yield and quality.

A most interesting observation is the lack of damage to grape vines with a hormone material used at these rates. ▲

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You'll notice something new about the 1959 Index. That's because our entire editorial approach was new. Exclusive marketing articles, such as the "Successful Salesmanship" series, "Basic Principles of Merchandising Fertilizer", "Herbicide Market Report" and many others, made FC different.

But we also carried better articles on production methods.

Other new sections were Materials Handling and Custom Application, Technical Review. Interested in reprints? If so, drop us a line.

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HOW MARKET RESEARCH CAN WORK FOR YOU

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an increase in retail dollar sales of 35% in 1959—7% less than the increase in sales of Brand A.

Brand B is similar to Brand A in its end-use by farmers and its primary area of distribution. It has also been on the market about the same length of time. Free samples apparently were not distributed in 1958 by Brand B.

Rather than a decline in number of users, Brand B experienced a slight increase of 7% of farmers using this product. A significant statistic is that dollar retail sales of Brand B increased 64% in 1959 over 1958. This is an increase of 22% more than Brand A and 29% more than the herbicide market generally in the area. Using these facts in conjunction with cost of sales information already available in the company's files, management has the basis for sound marketing decisions.

The table below summarizes some of the data concerning Brand A and Brand B.

	BRAND A		BRAND B	
	1958	1959	1958	1959
Number of Users	12,750	4,400	8,250	8,801
Acres of Corn Treated	169,415	319,278	416,052	409,971
Percent Change in Dollars Spent at Retail	—	+42%	—	+64%

An impartial analysis of the product characteristics of the two brands now provides the basis for a more intelligent decision regarding distribution efforts that might be most effective for each. The important point is this: with accurate market information, the chances are much greater of making a wise decision than without it. This is the real value of marketing research (or any other system to get market information)—*to provide management with data it needs to make the best possible decision and to make the best possible plans.* ▲

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The sixties . . . "decade of marketing"

Scene: XYZ Chemical Company board of directors meeting. *Problem:* Planning the 1960 Sales Season. *Situation:* 1960 outlook is for less money in the hands of farmers. USDA predicts consumption of farm chemicals will be held to 1959 levels.

Board members are seated around the table, forecasting by "seat of the pants methods" (borrowing a phrase from Dr. Hector Lazo who spoke at FCMS in November).

The sales manager attended FCMS in New York City and is attempting to impart some "new knowledge" to the group. He is up against his old Nemesis, however—*complacency*. Hadn't sales doubled since World War II? Why take a chance with new ideas? Besides they're too costly—and they may not work. We must think of our stockholders.

He had heard the term "re-orient" so much during FCMS that his head was spinning—"but how do you re-orient *this kind* of top management?"

Until this feat has been accomplished he knows there won't be any more to "crow about" at the conclusion of the 1960 season than during the past two or three seasons—when the company just barely maintained its market position.

As one board member after the other expounds on the merits of XYZ fertilizer, new production methods etc., the SM's mind reflects on the words of Charles E. St. Thomas, another FCMS speaker:

"I would submit to you that the business that continually puts its investment dollars behind simply trying to make a better fertilizer, twenty years from now will have the best damned fertilizer in the world but no place to sell it."

The SM asked: "How about de-emphasizing point-of-purchase materials this year and add a few other proven promotion ideas—such as local newspaper advertising, radio, etc.?"

After pointing out that their dealers have long complained about the superior promotion programs of the competition, the SM was told:

"Our fertilizer is tops—that's the best advertising. Let's stick to the promotion we understand. It's worked in the past and it will work as well in 1960."

The SM countered that he had nothing against counter displays, banners etc.—adding that they can be very effective, especially when tied in with a well rounded program. However, he pleaded, their dealers *just weren't using them*. They employed all kinds of excuses and "rarely found time to cooperate with special campaigns." He brought out facts exposed by Dr. Hector Lazo concerning a study conducted by the petroleum industry:

The big oil companies were shocked to discover that 73 per cent of their point-of-purchase material was wasted—materials costing millions of dollars!

"The dealer won't use them or gets them dirty and puts them up and leaves them for 60 days, when it was a 10-day promotion," he quoted Lazo as saying.

These and other facts seemed to stir the XYZ Chemical Company board of directors.

"Maybe we ought to take a look at our promotion program," one of them volunteered.

"Are we sure we really know who our customer *is*?" another one quipped.

"Yes, you know this is 1960—*not* 1946," came another quick retort.

Soon the SM had transformed the board of directors meeting into a virtual marketing clinic. They were getting away from talking about sales *per se*. He had never heard the term *marketing* used like this before. He found that management men who had forgotten about the *customer* all these years, were becoming *enraptured* in the subject of the 1960 farmer!

They tore into the weak spots of their sales territories. They began asking questions about certain dealerships. No wonder several salesmen had quit! Some of the dealers *weren't worth dealing with*. They immediately set about to make up a *dealer audit*.

Studying the problems of their salesmen, they found that they were being overly burdened with duties that are not in the sphere of selling. Often these duties actually hindered their selling efforts. Their better salesmen had the poorest territories. And on and on!

They liked the SM's reference to L. S. Kaniecki's remarks on what motivates salesmen to do their best. The Tennessee Corporation sales manager had told FCMS:

"There are many motivations for men. I find in our organization that if you can create a full sense of belonging—in other words, if the men have some idea of the *total picture* and *total objectives*, and you can create a picture that they are in the corporation for the good of the corporation—then you have gone a long way towards getting this highly desirable situation that we have been discussing."

The board of directors ended their meeting with the realization that marketing is a *way of doing business*—not just "a special program carried on by larger companies." They also agreed that in this "decade of marketing" it will be necessary for XYZ Chemical Company to *appraise its marketing effort every year*—not every 10 or 15 years.

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